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S. Hrg. 101-807, Pt. 2

AGRICULTURE, RURAL DEVELOPMENT, AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1991

HEARINGS

BEFORE A

SUBCOMMITTEE OF THE

COMMITTEE ON APPROPRIATIONS

UNITED STATES SENATE

ONE HUNDRED FIRST CONGRESS

SECOND SESSION

ON

H.R. 5268

AN ACT MAKING APPROPRIATIONS FOR RURAL DEVELOPMENT, AGRICULTURE, AND RELATED AGENCIES PROGRAMS FOR THE FISCAL YEAR ENDING SEPTEMBER 30, 1991, AND FOR OTHER PURPOSES

PART 2 (Pages 1-464)

Nondepartmental Witnesses

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AGRICULTURE, RURAL DEVELOPMENT, AND RELATED AGENCIES APPROPRIATIONS FOR FISCAL YEAR 1991

U.S. SENATE,
SUBCOMMITTEE OF THE COMMITTEE ON APPROPRIATIONS,
Washington, DC.

NONDEPARTMENTAL WITNESSES

The following testimonies were received by the Subcommittee on Agriculture, Rural Development, and Related Agencies for inclusion in the record. The submitted materials relate to the fiscal year 1991 budget request for programs in these areas.

AMERICAN ASSOCIATION OF CROP INSURERS

STATEMENT OF RICHARD C. GIBSON, CHAIRMAN, BOARD OF DIRECTORS

Mr. Chairman, members of the Subcommittee, thank you for the opportunity to be here today and present our views on the crop insurance program needs for the 1991 fiscal year. I am Richard Gibson, Chairman of the Board of Directors of the American Association of Crop Insurers; and also president of American Agrisurance, Inc. of Council Bluffs, Iowa. AACI's membership writes about 70 percent of all multiple peril crop insurance and represents both reinsured companies and master marketers. Over 2,000 agents and adjusters are also members of AACI.

Mr. Chairman, in 1989, our industry had the opportunity to provide about $13 billion of MPCI protection to about 800,000 policyholders, covering over 50 percent of the eligible acres in the U.S. This was about double the 1988 business record. The timely handling and processing of the greatly expanded business was possible only because the workload was handled by more than 13,000 local agents and adjusters as opposed to the pre 1980 law when everything was done through .multiple county government offices.

Of course, some of this tremendous increase in business was due to lingering effects of the 1988 drought, the requirement to purchase crop insurance in the disaster act, or a requirement by a lender. But we believe that the vast majority of this new and continued business was a result of the increased awareness about crop insurance and the marketing efforts of the private insurance industry.

We're very proud of the fact that we were able to provide this $13 billion of protection to our rural communities. And, quite frankly, it bothers us when people say crop insurance doesn't work. Crop Insurance is helping to keep thousands of producers on their farms, with the ability to repay their loans to community bankers and make purchases from main street merchants. The Independent Bankers Association of America said it best when they said "crop insurance has played an important role in providing economic stability to many farm communities".

Following the significant progress made in the program during the past two years, it was truly a disappointment to see the Administration propose the elimination of the crop insurance program in favor of an approach that would provide much less economic aid to farmers when they suffer disasters on their farms. We oppose the Administration's effort to eliminate the crop insurance program and replace it with a low level disaster program.

Mr. Chairman, the Administration's proposal has put us back in the position we have so often found ourselves. We make progress, increase participation, only to be threatened with setbacks by some unnecessary and arbitrary government action. Instead of putting our energies into ways to improve the program and help farmers, FCIC has forced us to reallocate our resources into crisis management -- correcting misunderstandings and dealing with this government-created confusion.

Today in rural America, farmers are unsure whether coverage remains in effect on spring planted crops or whether policies will be canceled and whether sign up will take place this summer on raisins, citrus and winter wheat if Congress does not complete changes to the program in the 1990 farm bill.

It is essential that farmers receive clarification from Washington that the government -- USDA and Congress -- will not abandon the farmer and leave them in some type of "never-never land." Unfortunately, fiscal years, crop seasons, insurance deadlines and delivery agreement expiration dates do not coincide. Unless the program and operating agreements are extended immediately for 1991, companies must begin canceling policies as early as April 1990 in a limited number of areas and by June 1990 in many winter wheat areas. If this is allowed to happen, agricultural lenders will be unable to provide operating loans to a significant number of farmers.

Because of the critical nature of this problem we respectfully request this Subcommittee to fully fund the federal crop insurance program for fiscal year 1991 at least at the level that FCIC stated would be necessary under the current law. This will allow an orderly transition to any new program that we anticipate will be created in the 1990 Farm Bill. However, we do alert the Committee that FCIC's budget is based on the estimated premium of $677 million, which is a very conservative estimate based on the $800 million in premiums in 1989 and the good reports from the field regarding the current sign-up which ends April 15, 1990 in most areas.

We also want to go on record with this Subcommittee that we believe in and are committed to helping develop an improved crop insurance program that will work for farmers and meet public policy objectives within budgetary constraints. An exhibit is attached for your information that outlines some basic principles that need to be included in an improved program to meet the risk management needs of agriculture in the 1990s.

Thank you again for the opportunity to testify and I will be pleased to answer any questions you may have.

Exhibit 1

MPCI DOLLAR COVERAGE

I. Background

For many years farmers have been able to purchase private crop hail/fire coverage on their crops. The market place has clearly dictated the farmer preferences to be able to pick from several dollar coverage plans.

II. Dollar Plan For MPCI

Considerable support for a dollar MPCI plans has been expressed by growers. The primary advantages for such plans are:

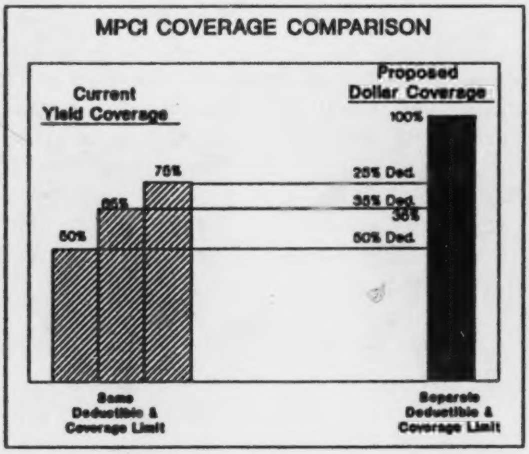
1 Simplicity,

2 Opportunity to buy additional coverage (up to the actual value of the crop), and

3 Additional coverage choices.

III. How MPCI Dollar Coverage Can Work

1 Coverage would be quoted on a dollar basis ($200/A., 250/A., etc.) for a given number of acres (limited to the approximate dollar value of the crop. The deductible for standard plans could remain at 25, 35, and 50 percent. The deductible should disappear as losses intensify. However, pilot programs should be initiated at lower deductibles at increased premiums in very stable production areas (i.e. Imperial Valley of CA; Central IL, etc.).



2 Deductibles would be loss payment trigger points rather than coverage limits.

3 Premiums would be expressed as a percentage rate.

4 Premium and administrative subsidy would be paid by the government to producers. The subsidy could be in the form of a crop insurance certificate given to the grower by ASCS.

5 Claim would be calculated by multiplying the percentage of insurable loss times the dollar coverage per acre times the lesser of the insured or planted acres. The percent of loss is determined by dividing the low yield by the normal yield.

IV. Loss Example

Purchased $200/A. coverage with 25% deductible.

100 bu./A. normal yield
- 20 bu./A. low yield
80 bu. loss
80% damage
- 25% deductible
55% payable damage
x $200/A. coverage
$110/A.
1.3 accelerated payment factor (100% divided by 75% after deductible)
$1.43/A. loss payment

Note: The accelerated payment factor in the example is calculated to cause the deductible to gradually disappear starting at 26% damage. It would attach at a higher percent of loss and at a higher rate of acceleration i.e. 1.5 and begin at 51% of damage.

V. Company Yield and Dollar Coverage

The graph below illustrates how the two coverage plans compare at various yields.

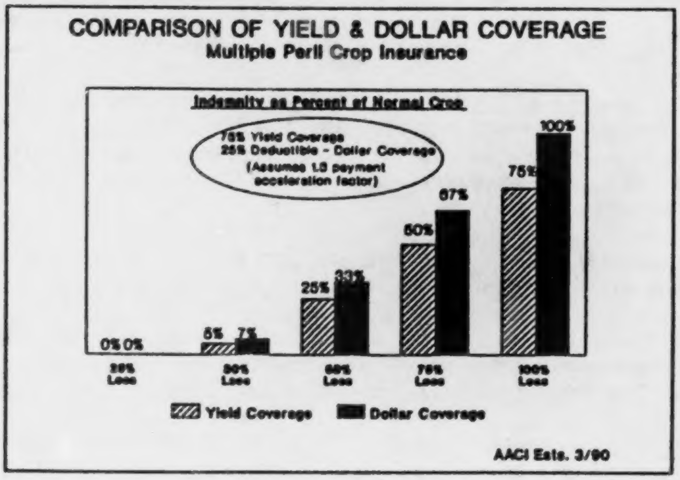


EXHIBIT #2

Principles to Improve Multiple Peril Crop Insurance
1990 Farm Bill

1. Adequate Coverage - During the hearings of the Crop Insurance Commission, the most frequent complaint we heard from farmers was inadequate coverage. A revamped crop insurance program must deal aggressively with this problem. We recommend that ASCS yields be used as the basic yield, with farmers having both the option and the incentive of proving their yield. In addition, there should be a pilot program to insure yields at higher than the current 75% level.

2. A Simpler Program for Farmers and Insurance People - One of the greatest problems with the current program is its enormous complexity and bureaucratic red tape. We must offer a simpler program under which a farmer can insure his crop for a certain number of dollars per acre, much like he is able to do under the current private hail insurance policies. Farmers will buy a program that is simple to understand and where benefits are known up front. In addition, companies can deliver such a simple program much more effectively than they can the current extremely complex program. A description of a "dollar coverage" program is attached to my statement (see Exhibit 1).

3. Greater Flexibility for Private Insurance Companies - If the farmer is to be best served, the private companies must be given the maximum flexibility to innovate and to compete for farmers' business. Under the current rigid, bureaucratic program, private insurance companies are not allowed to do what they do best -- serve the farmer in a competitive environment.

4. A Restructured Federal System - The role of the Federal Crop Insurance Corporation needs to be radically altered and reduced. We are not advocating deregulation, because we know as long as federal dollars are involved, there will need to be federal regulation. However, we feel the role of FCIC should be changed to one of a true regulator, much like state insurance commissions. The revamped agency would be charged with rate approval and ensuring that private companies build and maintain adequate reserves.

5. Farmer Premium Subsidy - Obviously, there must be federal involvement in subsidizing premiums for crop insurance. However, we feel this could be best achieved by channeling subsidies through ASCS, rather than the FCIC. We feel that it would be better to have ASCS perform the function of issuing vouchers or certificates for the premium subsidies. The most equitable way for this to be done would be for the farmer to receive a voucher to pay for a certain percentage of his premium at whatever level of insurance coverage the farmer chooses to buy.

6. Risk Bearing and Reinsurance - We feel companies can and will take more risk if they are given the proper incentives. Moreover, the companies should take the first dollars of loss, thus insuring integrity in the claims adjustment process. Government reinsurance would be necessary, especially for losses at catastrpohic levels. In addition, for certain high risk policies, it will be necessary for the government to provide for the availabilty of an assigned risk provision in the reinsurance program.

AMERICAN ASSOCIATION OF NURSERYMEN

STATEMENT OF BENJAMIN C. BOLUSKY

Mr. Chairman, the American Association of Nurserymen (AAN) welcomes this opportunity to present the nursery industry's views regarding the Fiscal Year 1991 budget for the U.S. Department of Agriculture (USDA). AAN is the national trade association of the nursery and landscape industry. We represent 4,000 firms across the country engaged in all aspects of environmental horticulture -- nursery crop farmers, landscape specialists, and garden center retailers. By almost any standard, our members are primarily family-owned farms and small businesses.

USDA's Economic Research Service (ERS) estimates farmer cash receipts of environmental horticulture and floriculture crops in 1988 at $6.9 billion ... and, the demand for nursery, floral, and other environmental horticulture crops continues to increase dramatically. In fact, the growth rate in numbers of companies in the nursery/ greenhouse industry is one of the highest in U.S. agriculture -- at least 10% annually, or nearly twice the pace of the general economy. The industry accounts for approximately 10% of all farm crop cash receipts -- ranking third behind soybeans and corn in plant crops. The nursery/greenhouse industry also accounts for more farm receipts than wheat or cotton.

An ERS analysis estimates that total consumer expenditures in 1988 for U.S. floriculture and environmental horticulture products in 1988 were approximately $27 billion. While all greenhouse and nursery products such as trees, flowers and other plants, bulbs and seeds were included in this figure, it excludes landscape services, related labor and material and product resales and accessories. Comparatively, total consumer expenditures for fresh produce in 1988 were estimated at $37 billion. Consumer spending for floral and potted plant items in the U.S. increased an inflation-adjusted 46% in 1988 over 1982.

The rising population, changing lifestyles and higher disposable incomes all are encouraging increased consumer demand for nursery/greenhouse products. In addition, heightened environmental concerns by government and industry (e.g. President Bush's "America the Beautiful" initiative to plant one billion trees in city landscapes and rural settings) will further increase demand for our industry's products.

In view of the increasing demand for the nursery industry's products, and to ensure that nursery plants are continually available to improve the quality of our environment and save valuable natural resources, AAN has graciously been invited by this Committee each year to submit testimony highlighting important areas of research which require the immediate and serious attention of this Committee -- and Congress as a whole.

At the same time, the nursery industry is committed to a significant reduction in the federal deficit as AAN members understand the deficit's potential danger to the nation's economy. To its credit, and unlike so many other agricultural segments, the nursery industry does not receive, and does not want, any federal subsidies or similar support. Yet, it believes in the critical need to maintain the integrity of federal research programs vital to American agriculture. You will note that AAN's recommendations reflect careful study and propose modest increases at best. We believe that the federal government's contribution to research is a reasonable expenditure of federal funds. Thus, AAN urges Congress to provide the critical funding as outlined herein.

First, AAN wishes to thank the Committee for its $400,000 appropriation in FY90 for a study to compile the methods used by foreign countries in protecting their domestic agriculture. The information resulting from this study should be very helpful when considering possible future revisions to Quarantine 37. For biological reasons, and to protect American agriculture, this quarantine regulates importation of plants in growing media into the United States. Since those revisions are expected to be published for comment in late 1990, it is our desire to see the results of this study published as expeditiously as possible.

National Initiative for Research on Agriculture, Food and Environment

AAN supports the proposed National Initiative for Research on Agriculture, Food and Environment at $100 million. AAN understands that these funds would be channeled into competitive grants for the study of a wide range of complex agricultural problems. Our only reservation in supporting this proposal is the need for some of this funding to be used to strengthen "core" research programs -- not just to be used towards competitive grants. What we mean by "core" programs are the on-going programs at both federal laboratories and state universities. Many of these need to be continued and strengthened through additional funding.

Water Quality

AAN supports the proposed $52.2 million increase to continue and expand water quality programs originally funded in FY90 as part of a coordinated government-wide initiative. In fact, AAN's goal is to establish the nursery industry as the champion of prudent water use. USDA water quality research programs will assist us in this endeavor. Likewise, H.R.3574 and S.2024, introduced by Representative Fred Grandy (R-IA) and Senator Tom Daschle (D-SD) respectively, would improve groundwater policy coordination within USDA. H.R.3574 and S.2024 would not only improve USDA coordination of its groundwater policy, research and education efforts, but the bills also recognizes that groundwater problems are site specific, and that research and education policy must address the needs of individual groundwater situations. AAN agrees with the thrust of H.R.3574 and S.2024 insofar as they instruct the research community to design "...a systems solution to production and groundwater protection."

"America the Beautiful" Initiative

AAN applauds the Administration's commitment to a nationwide tree planting effort as part of a major new environmental initiative -- "America the Beautiful." We believe that as a tree planting, maintenance and improvement program, "America the Beautiful" offers individual citizens the opportunity and incentive to beautify the American landscape. "America the Beautiful" is much more than an aesthetic landscape project. It is proven that plants provide many tangible environmental, social, psychological, and economic benefits to society, as they: (1) clean the air by removing carbon-dioxide and certain air pollutants (2) reduce energy consumption by providing cooling shade, as well as shelter from the wind; (3) protect water quality by reducing soil erosion; (4) enhance wildlife habitats; (5) increase property values; and, (6) produce valuable wood products. In its testimony before the Senate Appropriations Subcommittee on Interior on March 7, 1990, AAN strongly urged Congress to approve the "America the Beautiful" initiative under the jurisdiction of the U.S. Forest Service at its proposed full funding level of $175 million for FY91.

Global Climate Change Research

The nursery industry is becoming increasingly concerned with potential effects on climate patterns which may result from increased concentrations of carbon dioxide in the atmosphere. All segments of agriculture, including landscape horticulture and forestry, could be affected by shifts in temperature and rainfall. The prospect of global climate changes holds dramatic public policy implications with respect to environmental and energy policies. Trees and plants represent a very low-cost means for significantly reducing energy consumption and carbon dioxide build-up which may be factors contributing to any potential global climatic changes. It is for these reasons that AAN supports the Administration's proposed $26.2 million in FY91 funding for proposed USDA global climate change research and data analysis programs.

Agricultural Research Service

AAN wishes to thank the Administration and Congress for their continued and increased support of the Agricultural Research Service (ARS), particularly its Plant Science research and its programs on plant productivity affecting environmental horticulture crops. AAN also appreciates, that sufficient funds were appropriated in FY90 for the U.S. National Arboretum to acquire and install compactors which provided for sorely needed office and laboratory space for both professional and support staff.

Automated Plant Handling Systems Research

Despite successes in its growth rate, both in terms of number of companies and increasing sales, the nursery/greenhouse segment of American agriculture faces many obstacles. It is realizing a progressively smaller share of the vastly expanding U.S. "appetite" for environmental horticulture products. Statistics from the USDA-ERS Foreign Agricultural Trade Division show that the import/export ratio of nursery/greenhouse products has increased from 3.3 in 1983 to 5.6 in 1987 -- a 70% deterioration in domestic potential. United States producers also depend on plant handling techniques that are very intensive in terms of labor and resources. Labor and other resource costs in the U.S. are usually greater than those of its competitors in the global market. For example, payroll accounts for 34% of the typical nursery crop farmer's revenue. In fact, approximately 75% of their employees are hired on a hourly wage or piece-work status, a reflection of the manual nature of the industry's workforce. Labor shortages during peak production periods are becoming increasingly acute, particularly in certain areas of the country. Productivity per worker must increase dramatically for the U.S. environmental horticulture industry to achieve and maintain a competitive edge in a market with strong expansionary potential, both domestically and globally. Automated systems and materials handling are the most feasible long-term solution to this growing labor problem.

A recent survey of U.S. industry leaders confirmed the consensus that the U.S. industry's status in plant handling systems is either "average" or "deficit" when compared on a global basis. A very strong opinion prevails that the U.S. nursery industry should be "most advanced" and that "investing in research and development" was preferred to "buying technology from other countries." Survey respondees believe that automated plant handling systems would potentially reduce labor costs by one-third and other operating costs by about 15%. They also estimate 25-35% increases in productivity as well as industry expansion potentials of 20-25% over current production levels by incorporating automated plant handling systems into their production process.

Unfortunately, neither the federal government nor the nursery industry has been assertive in the research and development needed to achieve operational automated plant handling systems to address decreasing labor availability. As a result, AAN proposes that funding of an automated plant handling systems research program be shared by the Agricultural Research Service (ARS) in cooperation with the Cooperative State Research Service (CSRS). ARS would detail six scientist years to the program at a cost of $200,000 each. CSRS would support 15 projects annually at $50,000 each. In addition, it is proposed that the program begin with an international conference inviting world leaders and researchers in automated plant handling systems for the environmental horticulture industry to discuss technology status and opportunities. AAN is thus requesting $2.5 million in new funds for FY91 to support this automated plant handling systems research program including the international conference.

Professional Staff

AAN has long believed that ARS needs to strengthen and reinforce existing nursery crops research programs, but not at the expense of traditional research positions. This would involve integration of an interdisciplinary approach to research involving environmental horticulture products -- plants which improve and enhance the quality of man's environment.

AAN urges the addition of $300,000 to the proposed ARS Plant Science budget to ensure that additional professional staff such as an entomologist, a plant physiologist, and curators are added to appropriate ARS staff.

Pesticide Clearance

The Inter-Regional Project #4 (IR-4) has greatly assisted the environmental horticulture industry's efforts to obtain more prompt pesticide registrations for minor use crops when such pesticides are already registered for use on food or feed crops. These pesticides are absolutely essential for nursery crop farmers to comply with state and federal regulations which require interstate shipment of nursery crops to be 100% pest-free. Since nursery farmers must have these quarantine pesticides available, ARS needs to continue its pesticide clearance program research activities. However, the Congressionally mandated changes to the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), requires the reregistration of all pesticides. Since the number of research trials funded in the ornamental horticulture area has decreased dramatically over the last several years as a result of reduced funding, this reregistration requirement will exacerbate an already bad situation. AAN strongly urges this Committee to allocate an additional $1.2 million for the Agricultural Research Service to use for its pesticide clearance research program.

Japanese Beetle

Of acute interest to the nursery industry is continued pesticide research on Japanese beetle control on field-grown and container nursery stock for certification and export to Canada. Since the 1979 loss of chlordane for treatment and certification, about $100 million in plant sales to Canada have been lost because U.S. nurserymen cannot safely and economically meet quarantine requirements.

AAN wishes to thank ARS for research conducted in 1988 and 1989 with the bendiocarb and isazophos pesticides for beetle control in field grown plants. We understand this research will continue in 1990-91. However, research is desperately needed in several other critical areas, including container plant treatments; pesticide injection and drenching as alternate treatment methods; as well as testing and clearance of new pesticides. For example, bifenthrin, a synthetic pyrethroid, shows potential for Japanese beetle control, but requires additional research. AAN implores this Committee to provide adequate funding to ARS to maintain current efforts and to pursue these additional research needs.

Germplasm Program

As mentioned earlier, AAN supports the increase in the ARS Plant Science research funding. AAN understands this includes an additional $2.2 million to strengthen the plant germplasm system to assure the availability of genetically diverse germplasm to address continually changing threats to crop production. AAN supports these additional funds provided that a proportionate share is used to support the recently created germplasm repository for woody landscape plants at the U.S. National Arboretum.

Whitefly Research

The sweet potato whitefly is a serious pest of cultivated crops in many areas of the world and much of southern North America. In Florida in 1987, the sweet potato whitefly became a problem in the production of nursery and floral crops, squash, melons, and tomatoes. It is estimated that in 1988 the tomato industry alone suffered $30 million in damage as a result of this pest. Major losses also occur in cotton, especially in California and Arizona. As a result, a national coalition of growers/producers of agronomic and horticultural crops recently met with ARS representatives and developed a comprehensive research approach to address the problems to environmental horticulture crops posed by the sweet potato whitefly and other pests such as the ash whitefly.

The program calls for a multi-faceted approach including biocontrols, host plant resistance, insecticides, as well as conducting basic biological studies of the pest. The research program would be coordinated by ARS in conjunction with various university researchers in the states of Arizona, California, Delaware, Florida and Maryland. AAN supports additional funding of $1.5 million in the ARS FY91 budget to support this whitefly research program.

Cooperative State Research Service (CSRS)

Nursery Crop Research Station (Tennessee)

AAN wishes to thank Congress for appropriating $250,000 in FY90 for the establishment of a Nursery Crop Research Station in Warren County, Tennessee. Partly as a result of the FY90 appropriation, the project became eligible to receive $350,000 from the State of Tennessee. This combined seed money provided the critical start-up funds for the planning and construction of the station under the auspices of Tennessee State University. The station will address national research problems affecting environmental horticulture. Some of the anticipated research priorities include: (1) genetic enhancement of nursery crops; (2) research and development of nursery crop varieties that are resistant to nematodes; (3) research and development of longrange plant breeding programs and effective integrated pest management; (4) testing and evaluating new germplasm presently available through the U.S. National Arboretum; (5) research on stress tolerance in plants (i.e. cold weather, drought and pests); and, (6) research on drip and other irrigation systems appropriate for use and adaptation in the nursery industry. AAN respectfully requests $770,000 for FY91 to further the construction phase of the Nursery Crop Research Station. Such funds are critical and would be earmarked towards the construction of the necessary laboratories, offices, greehnouses and equipment sheds.

State Agricultural Experiment Stations (SAES)

Working cooperatively with ARS and the U.S. Forest Service, SAES addresses the local, regional and national research needs of agriculture. It is for these reasons that AAN continues to support this important research program. However, its effectiveness since 1980 has been jeopardized by the erosion of its funding base -- Hatch Act Formula Funds. For example, the FY90 budget was only 0.02% over that of FY89. Moreover, only a $3.5 million increase, or 2.2%, is proposed for FY91. Considering the value received from research developed by CSRS, AAN supports the Experiment Station Committee on Organization and Policy's (ESCOP) recommended increase of $11 million, or 7%, to $166 million. AAN likewise urges SAES Directors to equitably fund research which is classified as "Research Program 3.15 - Plants to Enhance the Environment."

Special Grants

Pesticide Clearance

As mentioned earlier, the IR-4 program is vital to the environmental horticulture industry. AAN is very appreciative of Congress having provided the first increase in six years to this program's budget from $1.3 million to $1.975 million for FY90. AAN also thanks and supports the Administration's proposed increase to $3 million for FY91. However, as explained previously, the necessity to reregister all pesticides, plus new registrations, will require considerably more funds than this budget permits. Additional funding will also assure that chemicals used in non-food products are included in the Congressionally mandated reregistration of all pesticides.

The CSRS' IR-4 program must be sufficiently funded to eliminate the accumulated multi-year backlog in pesticide registrations for environmental horticulture crops. In addition, it must accommodate the necessary research for the reregistration of 1,000 uses and new registrations of nearly 1200 plus 200 added annually to the system. This will require an additional $4.2 million, or a total of $7.2 million, for the IR-4 program in FY91. AAN urgently requests that Congress support the Administration's proposed increase, as well as provide an additional $4.2 million to CSRS' FY91 pesticide clearance program.

Pesticide Impact Assessment

The pesticide impact assessment program is also very important to the environmental horticulture industry. AAN appreciates the increased funding in FY90 and we heartily support the proposed increase for FY91 to $2.968 million.

Integrated Pest Management Research

By its very nature, the nursery and landscape industry is committed to protecting and beautifying the environment. As a result, it is turning increasingly towards integrated pest management systems. AAN has endorsed H.R.3514, the "Integrated Pest Management Research Act" introduced by Congressman Charles Pashayan, Jr. (R-CA).

Yet as businessmen and women, the industry must abide by the proliferation of federal and state laws/regulations governing pesticide use. AAN strongly believes there must be a recognized balance between the diminishing availability of effective pesticides and pest treatments mandated to meet a myriad of regulatory requirements, e.g. quarantines affecting interstate shipping. In the hopeful event that H.R.3514 is enacted, AAN urges that a primary focus of the proposed Office of Integrated Pest Management be to work with the state governments and federal agencies to modify their respective regulatory requirements by incorporating integrated pest management systems and/or biological controls.

EXTENSION SERVICE

Representatives of the Extension Service provide invaluable assistance to the environmental horticulture industry and to the 69 million American households who participated in one or more types of indoor or outdoor lawn and garden activities in 1988. The Extension Service is a logical and invaluable point of dependability for those seeking information about producing high-value nursery crops. It also provides consumers with information on how to properly care for our industry's products so such may properly serve their function of enhancing the environment. In light of these benefits, AAN was pleased with the FY90 increase in the Smith-Lever 3(b&c) funds. Although AAN is also pleased to note the proposed increase for FY91, it is simply not enough. AAN supports a 7% increase, or an additional $13.5 million to $260 million for FY91.

Pest Management

AAN wishes to thank the Administration for proposing a $100,000 increase to $7.2 million for Extension Service Pest Management programs. However, AAN proposes an additional $300,000, a total of $7.5 million in FY91 for this important program.

Pesticide Impact Assessment

AAN appreciates the increase to $2.6 million in FY90 for this pesticide impact assessment program. AAN also supports the Administration's proposed increase to $3.6 million for this important Extension Service pesticide impact assessment program.

ANIMAL AND PLANT HEALTH INSPECTION SERVICE (APHIS)

Federal and State governments, as well as most foreign countries, have enacted quarantine laws to prevent the artificial spread of hazardous pests into their jurisdictions. In the United States, it is the responsibility of APHIS and various state departments of agriculture to promulgate and enforce such quarantines. The federal quarantine program is vital to all efforts to protect American agriculture. AAN strongly supports APHIS' request for adequate program funds to prevent the introduction of additional foreign pests into the United States, as well as to prevent the spread of certain already established pests here. To do otherwise will result in a significant reduction in agricultural productivity and a similar increase in production costs.

Japanese Beetle

APHIS has the responsibility to certify nursery crops free of Japanese beetle to meet quarantine requirements for shipment into Canada, which is the principal foreign market for U.S. grown nursery crops. Since the 1979 cancellation of chlordane for nursery uses, no practical or effective pesticide treatment has been available for nursery crops to satisfy Canadian and various state requirements. As previously mentioned, AAN strongly supports research to identify, register or label appropriate pesticides for Japanese beetle certification.

APHIS' role in coordinating certification procedures with Canada is equally critical. AAN is appreciative of APHIS' role in coordinating a series of meetings with Agriculture Canada to address this issue and AAN is pleased to represent the U.S. nursery industry at these meetings. AAN urges APHIS to further investigate potential certification components, including a sequential soil sampling method combined with nursery production practices that minimize pest risk, such as clean cultivation. Pursuant to the U.S./Canada negotiations, APHIS also needs resources to survey and determine the current extent of Japanese beetle infestation in this country. AAN respectfully requests this Committee to adequately fund and direct APHIS to continue to diligently pursue resolution of this eleven year-old problem.

Imported Fire Ant

In many cases, the pesticide needs of the nursery industry to meet international, federal and state quarantines have not been adequately fulfilled. To ensure that nursery crops are free of pests (such as imported fire ant), USDA must maintain a strong program of testing pesticides to determine whether they are effective for quarantine certification purposes. In October 1989, AAN learned that chlorpyrifos treatments approved for imported fire ant certification are not effective for the expected residual period. AAN supports the recommendations of the APHIS Technical Work Group on Imported Fire Ant to retain these treatments and increase inspection and detection measures. APHIS and ARS are urged to continue work to identify and evaluate potential new controls.

The imported fire ant poses a continual threat to agriculture in general, especially in uninfested states such as Arizona and California. AAN supports maintaining the imported fire ant program at FY90's funding level of $4.2 million to support these regulatory activities and additional methods development work so vital to preventing the spread of this destructive pest.

Gypsy Moth

Gypsy moth is a prime example of a pest which is not particularly damaging to nursery production. However, nursery businesses within gypsy moth-infested areas are restricted in marketing their crops to help prevent the spread of the pest to uninfested areas. As gypsy moth continues to spread to such areas, it is critical that APHIS increase inspection and monitoring of household articles, recreational vehicles and mobile homes. These -- not nursery crops -- are the primary vectors responsible for the long distance spread of the gypsy moth, therefore, such monitoring programs must be strengthened. To carry out these regulatory responsibilities, AAN supports the recommended FY91 budget increase of $300,000 to $4.9 million.

Golden Nematode

The golden nematode poses a threat to potato-growing lands both within and outside New York State, as well as to nursery production areas. Approximately 9,000 acres in nursery crop production could be affected by a lack of proper control of the golden nematode. AAN urges APHIS to continue the golden nematode program and to allocate funds necessary for this purpose.

Agricultural Quarantine Inspection

AAN commends APHIS for its innovative efforts to maintain and improve its effectiveness in preventing the introduction of foreign animal and plant pests into the United States. Port-of-entry inspections continue to be important deterrents against accidental introduction of such pests. In recent years, outbreaks of medfly, oriental fruitfly, ash whitefly, and citrus canker confirm that increased funding is necessary for APHIS to effectively prevent such pests from entering the United States. AAN thus supports the proposed budget of $75 million in FY91 for agricultural quarantine inspections. However, AAN strongly objects to the adoption of "user fees" to pay for this most important APHIS program. To levy fees on world-wide travelers for such a Federally mandated program would be inappropriate, and could set a bad precedent for future indiscriminate use of such fees. AAN thus urges Congress to fund in its traditional manner the APHIS Agricultural Quarantine Inspection program.

National Plant Germplasm Quarantine Center

AAN strongly supports funding for the new APHIS National Plant Germplasm Quarantine Center at Beltsville, MD. Serious inadequacies at the outmoded plant quarantine facility at Glenn Dale, MD, as well as the increasing need to introduce plant germplasm into the U.S. underscore the need for this new facility. Germplasm introduction of vegetatively propagated ornamental and fruiting plants (such as apples, pears, peaches, plums, grapes, and other crops) is vital to American agriculture--including nursery crop production. AAN respectfully urges favorable consideration of the Administration's FY91 proposal of $12 million for the first phase of construction.

Mediterranean Fruit Fly

During the summer/fall of 1989, several infestations of medfly were discovered in four California counties. These infestations are currently under eradication, but are severely taxing State and Federal control programs. AAN supports the proposed increase in FY91 funding to $10.4 million to continue control programs for this serious pest.

Witchweed

Witchweed is a parasitic plant which attacks corn, sorghum and other crops in the grass family. It is considered a serious threat to these crops, and though it does not directly affect most nursery crops, nursery farmers may nonetheless be affected by quarantines which restrict free movement of nursery plants from witchweed-infested areas. Witchweed's distribution in the U.S. is currently limited to parts of southeastern North Carolina and eastern South Carolina. State regulatory officials have stated that the ongoing witchweed control program has been very successful, and that witchweed can be totally eradicated within five years -- if adequate funding is allocated. Therefore, AAN strongly supports maintaining the witchweed program funding at least at the FY89 level of $5.281 million. Otherwise, progress made in recent years may be lost if funding is decreased. Moreover, the false economy created by a budget reduction may be offset by higher future program costs or loss of agricultural profitability if this plant pest spreads in an uncontrolled fashion.

The American Association of Nurserymen is a strong advocate of American agriculture. As fewer and fewer chemical pesticides are available for regulatory certification purposes, it is vital that APHIS maintain an active and highly visible role in plant pest control for the nursery industry and all of American agriculture.

As in past years, Mr. Chairman, AAN truly appreciates this opportunity to present to this Committee the nursery industry's views regarding to agricultural research. Thank you.

American Association of Nurserymen
FY91 Research Appropriations Testimony
Summary

Program	Support
National Initiative for Research on Agriculture, Food and Environment	$100 million
Water Quality	$52 million
America the Beautiful	$175 million
Global Climate Change Research	$26.2 million
Agricultural Research Service	
Automated Plant Handling Systems	$2.05 million additional
Professional Staff	$300,000 additional
Pesticide Clearance (IR-4)	$1.2 million additional
Japanese Beetle	*
Germplasm Program	$2.2 million additional
Whitefly Research	$1.5 million additional
Cooperative State Research Service	
Nursery Crop Research Station (Tennessee)	$770,000 additional
Hatch Act Formula Funds	$11 million additional
Pesticide Clearance (IR-4)	$4.2 million additional
Pesticide Impact Assessment	$2.968 million
Extension Service	
Smith-Lever 3(b&c)	$13.5 million additional
Pest Management	$300,000 additional
Pesticide Impact Assessment	$3.6 million additional
Animal & Plant Health Inspection Service	
Japanese Beetle	*
Imported Fire Ant	$4.2 million
Gypsy Moth	$4.9 million
Golden Nematode	*
Agricultural Quarantine Inspection	$74.969 million
National Plant Germplasm Quarantine Center	$12 million
Mediterranean Fruit Fly	$10.431 million
Witchweed	$137,000 additional

* While specific funding levels are not cited herein, AAN requests Congress to provide adequate FY91 funding to maintain current programs and pursue additional research needs.

AMERICAN ASSOCIATION OF RETIRED PERSONS

STATEMENT OF MARTIN CORRY

The American Association of Retired Persons (AARP) appreciates the opportunity to express our positions on matters of concern to this subcommittee. This is the first occasion on which our Association has presented testimony to this Subcommittee. Our statement especially reflects the growing concern among our members over the situation of rural older people.

THE CURRENT SITUATION OF RURAL OLDER PEOPLE

Some of the nation's most persistent economic, housing, and health problems are concentrated in rural areas among older people. In 1983, rural older people had a poverty rate of 17.8% compared with 12.1% for older people living in metropolitan areas.

Economic problems are particularly severe among rural women living alone and among minorities. When these factors are combined, poverty is nearly universal. In 1987, 80% of older black women living alone in rural areas had incomes below the poverty line. The Southern U.S. is especially hard-pressed by rural poverty. The nine states with the highest rates of poverty for older people are all in the South.

In addition to problems associated with low incomes, older persons in rural areas have much less access to needed services. The lack of services or transportation to needed services can mean losing one's home for too many rural older people.

The Association urges special attention to the plight of older migrant and seasonal farmworkers. For the past three years, AARP has served as co-convener of a National Task Force on Older Farmworkers. Life expectancy among farmworkers is under 50 years, reflecting the dangerous and demanding nature of the labor and the low incomes of the workers. Farmworkers often experience problems characteristic of the elderly before reaching their fiftieth birthday. Disability levels are high -- 44.5% of farmworker families include a disabled member according to one federal study. Unfortunately, access to needed services has often been blocked by prejudice, language barriers, and a lack of outreach.

To address aspects of these problems, our recommendations will focus on two areas under the jursidiction of this Subcommittee: rural housing and food stamp outreach.

RURAL HOUSING

One result of high rates of rural impoverishment is a striking concentration of housing problems among rural older people. According to research commissioned by AARP's Public Policy Institute, more than half of low-income older homeowners are located in rural areas even though only 27% of older households are to be found in such areas. The Center on Budget and Policy Priorities recently reported that 57% of older people living in severely inadequate housing reside in rural areas.

The Association supports current efforts by the authorizing committees to promote a rural housing initiative. As such intiatives are authorized and budget allocations allow, AARP urges this Subcommittee to expand rural housing programs.

To address problems experienced by lower income older homeowners, AARP urges this Subcommittee to expand the Section 504 home repair grant program. Despite the success of the program, funds have been frozen for several years, which has meant that the number of households served each year has been declining. The Farmers Home Administration reports that over 17,000 eligible applicants are waiting for Section 504 grants, a number five times that which can be served at current funding levels.

We recommend that $20 million be appropriated for the grant program along with an increase in the loan program sufficient to match the grants. At the very least, we recommend that funding be provided to account for increasing programmatic costs which have eroded the ability of the program to serve low-income older homeowners over the last several years.

FmHA data indicates that there are roughly four times as many applications for Section 515 housing as can be funded for FY 1990, indicating the degree of unmet need in rural areas. To provide suitable rural rental housing, the Section 515 program should be increased, with priority given to serving previously underserved areas and populations such as older farmworkers. Congregate facilities, created both in new projects and through retrofitting existing projects, should be encouraged.

We also want to call the Subcommittee's attention to the importance of making congregate services available in rural housing sites. These nonmedical support services -- including meals, housekeeping, personal assistance and transportation -- help older residents remain in their apartments rather than suffer institutionalization. Congregate services are especially needed in rural areas where alternative community services are often lacking. Evidence from a small HUD program and from state programs has shown that congregate services at housing sites for older people can delay or prevent unnecessary institutionalization.

Finally, AARP is concerned about the lack of technical capacity within rural institutions to meet the challenges of providing affordable housing. We urge this Subcommittee to request a study by the General Accounting Office (GAO) on the need for technical assistance to potential sponsors of housing, giving special attention to remote areas and areas with large concentrations of underserved populations such as older and disabled farmworkers. Such a study could provide important information to the Subcommittee in making decisions on program levels and targeting for scarce federal resources.

FOOD STAMP OUTREACH

The concentration of low incomes among rural older people also results in less ability to purchase adequate food to maintain a healthy diet. Because diet is important in the maintenance of good health, it is imperative that persons with low incomes have access to Food Stamp benefits.

Outreach is needed to inform potential recipients of their eligibility for Food Stamps and to assist them in completing application forms. The social and physical isolation of rural older people makes outreach difficult but all the more essential in rural areas. Food Stamp participation rates are low among rural people, in part because of the lack of information and in part because of their distance from food stamp offices. A 1984 USDA study found that 27% of nonparticipants lived more than nine miles from the nearest office; 31% indicated that getting to the food stamp office was a "big problem."

Proposals have been made to initiate an outreach demonstration project under the Food Stamp program. We hope that this Subcommittee will fund such an effort, where a relatively small amount of money can make such a large difference in the lives of low income families.

Thank you again for the opportunity to present our testmony. We look forward to working with the Subcommittee to improve the lives of rural Americans of all ages.

AMERICAN HOME SEWING ASSOCIATION

STATEMENT OF MORRIS JARVIS, PRESIDENT, HANCOCK FABRICS, INC.

Mr. Chairman and Members of the Subcommittee, I am Morris Jarvis, President, Hancock Fabrics, Inc., Tupelo, Mississippi, and Chairman of the Government Relations Committee of the American Home Sewing Association. I am submitting this Statement to you on behalf of the corporate and retail members of the association regarding the U.S. Department of Agriculture's Extension Service, Fiscal Year 1991 funding request. I understand it will be incorporated in the permanent hearing record.

Our association is the only organization which represents the entire home sewing industry in the United States, including such areas as fabrics, fibers, patterns, notions, trimmings, sewing machine manufacturing, retailing, wholesaling and publishing.

Mr. Chairman, our industry works cooperatively with the USDA's Extension Service, and their clothing and textile specialists on sewing education programs serving hundreds of thousands of citizens around the country. These Extension Service education programs are critical to the sewing and textile industries.

While clothing and textiles represent a modest portion of the existing Extension Service education programs, clothing is a basic necessity of life, and therefore, sewing and clothing - relating programs take on an economic importance to our society that far exceeds that of other desirable but less fundamental programs. Sewing skills enable people to lower their expenses for clothing and to obtain income through utilization of their sewing skills by performing part-or full-time sewing related work. People do not need extensive facilities or equipment to make clothes.

Mr. Chairman, last year in testimony before this subcommittee our association detailed a unique private-public sector program we initiated with the cooperation of the USDA's Extension Service, entitled "Sewing As A Business". At that time we supported a sewing education program designed to assist the sewing entrepreneur in establishing a profitable home-based business. We targeted the State of Mississippi for the Pilot Project because of its low per capita income and unemployment rate. I am proud to say that the project entitled, "Mississippi Pilot Project in Textiles and Clothing Entrepreneurship" was a resounding success. During 1988 the six workshops around the state included 123 attendees. Well over 500 Mississippians applied to attend the pilot project. The response was overwhelming.

As a bottom line, Mr. Chairman, the Mississippi Extension Service Project increased the incomes of its participants. The following list of five participants illustrates the rise in their incomes after attending and graduating from the workshop.

Irma May	Before - $500-999 After - $7,000-9999
Connie Richardson-Russell	Before - $500-999 After - $6,000-7999
Bob Gibson	Before - $1,000-2999 After - $10,000-14999
Fran Sexton	Before - $1,000-2999 After - $20,000-24,999
Hattie McKenzie	Before - Under $500 After - $5,000-6999

This type of project is not new to the Extension Service. In fact, in 1983 and 1984 nearly 1,000 Alabamians attended five county and 16 Sew For Pay area meetings. I understand that over 1,500 people in Alabama receive a monthly newsletter entitled, "Sew-For-Pay". In 1986, the Massachusetts Extension Service sponsored a highly successful "Sewing as a Business" conference.

The Extension Services of Illinois, Indiana, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, Ohio and South Dakota have sponsored a highly popular book entitled, "Sewing for Profit" which has sold over 55,000 copies.

Mr. Chairman, the AHSA believes that this Mississippi project revitalizes rural America in one simply way -- it assists rural families to survive in this economic environment by increasing their income. It also provides hard-sought tax revenues for state and federal governments; increasing farm-family income is a positive goal that the AHSA and the USDA wholeheartedly support.

The AHSA requests that the Pilot Project in Mississippi be continued and expanded to South Carolina and Alabama in Fiscal Year 1991. Both states have indicated an interest in starting the program, but lack the resources to do so.

We urge the Subcommittee to dedicate funds in the amount of $180,000 for a "Rural Business Opportunity Development Clothing and Textile Project," patterned after the 1988 Mississippi Project, in the USDA's, Extension Service "Federal Administration and Coordination" portion of the Fiscal Year 1991 Extension Service Budget. This figure is based on the experiences of running the 1988 Mississippi Project. These funds should be dedicated in equal amounts for projects in Mississippi, South Carolina and Alabama. The AHSA specifically, requests that this $180,000 be inserted as a dollar, line-item project under the Federal Administation and Coordination category.

Last year, the Senate Appropriations Committee inserted the following Report language under the "Federal Administration and Coordination," portion of the Fiscal Year 1990 ES-USDA budget (p. 38-39, Sen. Report 101-84):

> "The Committee concurs with the House in recommending continuation of the Home Sewing Project in Mississippi and expansion of this project to South Carolina and Alabama. Up to $180,000 is included for these projects."

The AHSA fully supported this Senate Report language. Unfortunately, Mr. Chairman, in trying to work with Extension officials to implement this directive, our industry is still unable to confirm that each of these states have received their $60,000 appropriations. Extension officials said there was no "line-item" appropriation and that even if the money was included in the 1989 Public Law 101-161, it might have been "absorbed" for other purposes. We are working with the Congress to see that these funds are made available to keep this Program functioning.

In short, Mr. Chairman, we believe that this particular program is important to continue in Fiscal Year 1991 and is supported by state extension officials in Mississippi, Alabama and South Carolina as well as the citizens who benefit by attending these projects. It is an extremely modest amount to invest in a project which generates federal and states revenues.

The AHSA appreciates this opportunity to testify once again before this subcommittee. We hope you can support our request.

AMERICAN OAT ASSOCIATION

STATEMENT OF DR. DEON D. STUTHMAN

The American Oat Association (AOA) is deeply concerned about the shortage of domestically grown oats. The membership of the AOA includes 450 representatives from all sectors of the oat industry. The association's fundamental goal is to expand U.S. oat research and production to meet the increasing demand for oat products by health conscious Americans.

The AOA has established two legislative committees to convey its concerns and objectives to agricultural policymakers in Washington. The Farm Policy Committee of the AOA is charged with developing alternative farm policy options to provide adequate oat production incentives to American farmers. The most crucial need at this time is to eliminate the disincentive to oat production under the current target price system and to provide planting flexibility as an incentive for oat production.

The AOA Research Committee is responsible for working with USDA's Agricultural Research Service to support oat research programs to improve the agronomic, nutritional and processing characteristics of U.S. oats. The Committee is also responsible for communicating the program and funding requirements to the U.S. Congress. The AOA Research Committee's 1990-91 legislative objectives are:

*(1) Full funding of the Cereal Chemist position at Fargo, ND. This position received partial funding of $100,000 for FY 90. We are requesting an additional $100,000 to begin critical oat research exploring alternative milling procedures to produce optimum human food quality oats and animal feed.

*(2)Additional funding of $100,000 for oat germplasm enhancement at Aberdeen, Idaho. This program received initial funding of $100,000 for FY 90. The purpose of the germplasm enhancement effort is to improve the agronomic qualities of the germplasm so that the material is more useful to oat breeders in developing new varieties.

*(3) The AOA supports additional construction funding for the USDA National Seed Storage Laboratory at Fort Collins, Colorado, at approximately $4 million. This request is due to the critical shortage of storage space for all seed samples.

*(4) The AOA supports funding of a combined oat and barley ARS research position to be housed in the USDA/ARS cereal crops research laboratory in Madison, Wisconsin. This request is for $200,000 for basic studies on soluble fiber as it relates to human nutrition. The barley organizations have also included this item in their request for research funding. Each of the four research requests is explained in detail in the written testimony submitted for the hearing record.

January 1990

PROPOSED USDA OAT FIBER QUALITY POSITION AT FARGO, NORTH DAKOTA

The unique nutritional benefits provided by the dietary fiber of oats have recently stimulated increased demand for oat products as human food. The soluble fiber in oats, composed of beta-glucans, has been demonstrated to produce favorable effects in moderating glucose metabolism and lowering blood serum cholesterol levels when included in human diets.

Information concerning the content of soluble fiber in the grain of germplasm accessions in the U.S. oat collection will soon be available. To put this information to use, a scientist with a good cereal chemistry background is needed to coordinate efforts to develop germplasm lines with modified soluble fiber content and distribution which could be used to develop varieties that would produce grain with increased value for both human and animal nutrition. The needed scientist would address improvement of quantity, quality, and utilization of oat fiber with specific objectives to develop an understanding of oat fiber quality, distribution in the grain, regulation of fiber production, inheritance and improved utilization.

The scientist, stationed at North Dakota State University, could cooperate with a breeder in the Department of Crop and Weed Sciences to produce germplasm lines with increased soluble fiber content for improved human nutrition and possibly, lines with lower soluble fiber content to improve feeding value in monogastric animal nutrition. The scientist would be housed in the Department of Cereal Science and Food Technology (CSFT) which would facilitate cooperation with other cereal scientists. The USDA Hard Red Spring Wheat and Durum Quality Laboratory has been housed in CSFT since 1960 and resulted in effective cooperation among scientists. Facilities for milling evaluations and instrumentation necessary for carbohydrate biochemical studies are available in CSFT. This cooperation would facilitate milling evaluations of lines with modified soluble fiber content to determine their utility in production of milling fractions enriched for soluble fiber and permit monitoring fiber quality in the modified lines. Using these facilities, the scientist could obtain information relative to soluble fiber quality and quantity in milling products to develop soluble fiber standards for product labeling. Use of the various milling fractions could be evaluated for production of food products.

Nutritionists in the Department of Animal and Range Sciences (ARS) could cooperate in conducting feeding trials to determine the feeding value of lines with modified soluble fiber content in monogastric and ruminant nutrition. Laboratories well-equipped for nutritional analysis are available in ARS. The value of nutritionally modified lines could be evaluated in the formulation of feeds produced in a commercial scale feed mill soon to be constructed.

The addition of a cereal chemist to coordinate the development and evaluation of oat germplasm lines modified for soluble fiber content and to gain a better understanding of the chemical composition of oat fiber should lead to increased utilization of oats in more specialized areas of human and animal nutrition. This work should provide a more readily available source of high quality soluble fiber to meet needs of U.S. human nutrition.

February, 1990

Oat Germplasm Enhancement Program
Aberdeen, Idaho

The U.S. Department of Agriculture's Agricultural Research Service recently completed the construction of the National Small Grains Germplasm Research Facility at Aberdeen, Idaho. The primary mission of the new facility is to provide secure storage for the National Small Grain Collection (NSGC), numbering in excess of 110,000 accessions, and other small grains germplasm. In addition, the staff is responsible for conducting research concerned with the acquisition, maintenance, evaluation, and enhancement of these genetic resources. Genetic enhancement of small grains germplasm, one of the most important research functions at the location, will be attained through a variety of plant breeding strategies and state-of-the-art biotechnology.

The Oat Crop Advisory Committee, representing the oat research community in the United States, first prepared a National Plan for Oat Germplasm Enhancement in 1983, with a revised version prepared in January, 1987. In the plan, the oat research community documented the need for a coordinated national effort in oat germplasm enhancement concerned with efficiency of production; reduction of losses due to lodging; protection from devastating diseases, such as crown rust and yellow dwarf; and nutritional quality, particularly dietary fiber and protein. The published plan called for coordination of this effort at Aberdeen, Idaho.

Coordination of this national effort by the staff of the National Small Grains Germplasm Research Facility is appropriate, since the new facility permits the location to play an expanded role in small grains research as well as research coordination on a national basis. Aberdeen has a long history of regional and national involvement in oat research, dating back to the early 1900's. The relatively disease free, irrigated environment is ideally suited to the production of oats, with some of the highest recorded oat yields in the U.S. being obtained at Aberdeen. An important ARS staff nucleus already exists at Aberdeen (five positions), presently committed full or part-time to oat research programs in the new facility.

Additional funds to the location would only be required for support staff specifically involved in an expanded oat research program, one time equipment purchases, and operational/coordination costs. We view this program as an opportunity for Aberdeen to more fully realize its potential as an ARS focal point for small grains research and also as an opportunity to directly benefit or enhance oat production in Idaho and other western states. The latter may come at a particularly critical time, as major firms involved in oat processing and marketing are taking an expanded look at the production potential of oats in Idaho and in other non-traditional oats producing states. The expanded interest in oats presents an opportunity for an established crop to play a new role in the agriculture of Idaho and other western states.

The staff at Aberdeen would specifically be involved in coordination of the national effort, including allocation of ARS funds to cooperating locations. In addition, Aberdeen could be utilized as a location for the increase of segregating populations to be selected and evaluated in a diversity of environments outside of Idaho, intercrossing of selected parents in a national program and, because of its favorable field environment, as a location for evaluation of yield potential and quality components. Recent staff additions and laboratories available in the new facility will also permit the location to participate in state-of-the-art oat gene mapping research as well as research concerned with new approaches to gene transfer.

January 1990

STATUS OF THE NATIONAL SEED STORAGE LABORATORY, FORT COLLINS, COLORADO

The FY88 Federal Budget included $1 million to plan and design the expansion of the National Seed Storage Laboratory (NSSL) at Fort Collins, Colorado. The contract for the planning and design was awarded to Merrick and Company of Denver, Colorado in December 1988 and they immediately began work. Merrick and Company was instructed by the Agricultural Research Service to design the NSSL expansion with the expectation that $11 million in construction funds would be appropriated. However, the FY89 and FY90 appropriations were only $2.75 and $5.5 million, respectively, for a total of $8.25 million. With the delay in funding, the cost of the NSSL expansion is now estimated to be $12.25 million because of inflation and changes in the local construction situation. Hence, ARS has requested the remaining $4 million in the FY91 budget. The 95 percent design will be submitted to ARS by Merrick later this month.

The NSSL Planning and Construction schedule has been delayed and is now as follows:

Final Design	5/90
Issue Solicitation for construction	10/90
Award Contract for construction	12/90
Complete Construction	12/92

Our conventional seed storage vaults are expected to be filled to normal capacity within the next 6 months, and then we will have to store on movable carts in the aisles. Because of the disadvantages of this type of storage, we have constructed a small, temporary addition that will hold 16 cryotanks for cryogenic storage. We plan to store all new accessions and regenerated accessions which have seed the size of wheat and smaller only in cryotanks. However, all large seeded species will have to be stored in the aisles. We are hopeful that these strategies will allow us to continue to receive new materials until our new facility is constructed, but completion of the funding for the NSSL expansion in FY91 is critical.

PROPOSED POSITION DESCRIPTION
RESEARCH ON NUTRITIONAL QUALITY OF OAT AND BARLEY FIBER
CEREAL CROPS RESEARCH UNIT, AGRICULTURAL RESEARCH SERVICE
U. S. DEPARTMENT OF AGRICULTURE, MADISON, WISCONSIN

A Research Chemist is needed to do research on the synthesis and physicochemical properties of oat and barley fiber as related to human nutrition. The unique properties of the mixed-linked beta-glucans, found in high concentration in oats and barley, on lowering LDL-cholesterol, a high risk factor in heart disease, are now becoming well documented. The mechanism of their action and the pathway and regulation of their synthesis in the plants remains to be elucidated. The proposed scientist would study the physicochemical properties of beta-glucans in oats and barley to determine characteristics important for efficacy. He/she would collaborate closely with Dr. Judith Marlett in the University of Wisconsin Nutritional Sciences Department who is using oat bran as a model to study fiber effects on the human upper gastrointestinal tract. In collaboration with Dr. David Peterson and Dr. Ronald Skadsen of the Cereal Crops Research Unit, he/she will study the physiology and biochemistry of beta-glucan synthesis and degradation in oats and barley. This scientist will form an integral part of an ARS team aimed at enhancing oats for beta-glucan. This effort consists of germplasm evaluation at Madison and Aberdeen, Idaho (Dr. Darrell Wesenberg) and a more detailed investigation of selected lines at Albany, California (Dr. Robin Saunders, Dr. Antionette Betschart).

The initial focus of the proposed position will be to investigate the primary and secondary structure of oat endosperm beta-glucan by the use of specific enzyme degradations, HPLC, GC-MS, and NMR. Differences between oat and barley beta-glucan will be determined, to account for the greater solubility of the former. The relationship between the beta-glucans and other endosperm cell wall components will be determined. Methods for large scale preparations of specific beta-glucan fractions will be developed to provide adequate material for feeding studies with model systems and humans.

The results of these studies will define the essential properties of the oat and barley fiber that are important for human nutrition. Also, they will assist plant breeders in developing superior genotypes. For barley, this may mean developing separate varieties for food use, as high beta-glucan in malt is disadvantageous for brewing.

The Cereal Crops Research Unit has adequate laboratory space for an additional scientist, and some shared facilities are available on the University of Wisconsin Campus (NMR, GC-MS). The position would need to be funded for at least $200,000, preferably with an initial start-up package for equipment.

STATEMENT OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION

This testimony is submitted on behalf of the American Psychological Association (APA), a scientific and professional organization representing over 102,000 psychologists, on the fiscal year 1991 budget for the Animal and Plant Health Inspection Service (APHIS) of the United States Department of Agriculture.

Included among APA's membership are research psychologists who use animals in their research — research that increases our understanding of cognition and memory, mental illness, drug abuse and addiction, and human and animal behavior. APA has been concerned about the care and welfare of laboratory animals since 1925, when a committee was formed to help set policy for the humane use of animals in psychological research. Good science requires good animal care.

Scientists are morally and ethically obligated to ensure the humane treatment of the animals that are necessary for research. Scientists are also responsible to the public, who are concerned about the care and use of animals in research. The inspections carried out by APHIS at over 1,300 research facilities are an important part of assuring the public that scientists are meeting this obligation. Unannounced APHIS inspections at animal research facilities ensure compliance with the letter and spirit of the Animal Welfare Act.

The Animal Welfare Act, passed in 1966 and most recently amended in 1985, regulates the use of animals in research. APHIS enforces the Act through licensure, registration, and annual inspections. Institutions are required to meet standards for handling, housing, feeding, sanitation, and veterinary care. These standards have been recently revised to reflect changes Congressionally mandated by the 1985 amendments. Estimates from the National Association of Biomedical Research are that it will cost the research community close to $2 billion to implement the changes proposed by APHIS.

When the last part of the regulations to implement the 1985 amendments to the Animal Welfare Act are made final sometime this year, APHIS inspectors will have the difficult task of assessing the psychological well-being of non-human primates used in research — a Congressionally mandated criteria. It is not yet clear how APHIS will implement this part of the 1985 amendments, but it is clear that it will require a change and an improvement in the training of APHIS inspectors.

For this, and other reasons, APA recommends $12 million be appropriated for FY 1991 for the APHIS animal welfare inspection program. Past levels of funding for this program, as well as the fiscal year 1991 budget request, have been inadequate to allow the agency to carry out its mandated responsibilities in a manner consistent with current knowledge of animal welfare, animal health, and animal behavior. This is especially true for FY 1991, when APHIS inspectors will have added responsibilities.

APA is especially concerned about the quality of the inspection process and the training of inspectors. The continuation of the nation's behavioral and biomedical research using animals, depends in part, on this inspection process. Research facilities using animals must be above reproach in order to keep the public's support for the vital research carried out in the nation's laboratories. This is possible only if the public is convinced that research animals are necessary, and that they are treated as humanely as possible.

IMPACT OF ADMINISTRATION'S BUDGET RECOMMENDATION

APA is pleased to see that the administration has recommended an increase over the FY 1990 budget, but feels strongly that it is not adequate to meet the agency's needs and responsibilities. We are not alone in our concern about the inadequacy of the animal welfare budget. A group of 122 scientific and animal welfare organizations have joined to sign a letter requesting an increase in APHIS's FY 1991 animal welfare budget to $12 million. This money is needed for several purposes.

NUMBER OF INSPECTORS

The number of inspectors in APHIS's Regulatory Enforcement and Animal Care (REAC) program is inadequate. There should be enough inspectors to provide at least an average 2.0 inspections per year for not only the estimated 1,300 research facilities, but also 3,800 licensed dealers, 1,400 exhibitors, and 400 intermediate animal handlers also covered by the Animal Welfare Act. APHIS itself has said that 4.0 inspections per year would be optimum -- a goal that seems less and less achievable.

More inspectors will also be needed due to the increased demands on their time to not only adequately inspect animal research facilities themselves, but to examine the more detailed paperwork that must now be kept to comply with Parts I & II of the Animal Welfare Regulations. More inspectors will also be needed if they are to receive adequate training and re-training. As inspectors spend more time in training, and those in the field are re-trained, there will have to be an increase in their numbers if adequate enforcement is to be maintained at even current levels.

INSPECTOR TRAINING

More important than the number of inspectors is the training they receive to enforce a complex set of regulations. While the expertise to train inspectors exists within the scientific and veterinary communities, APHIS has not yet been able to systematically take advantage of this valuable resource. With due respect to the capabilities of the APHIS training staff, as well as to training officials from other agencies, insufficient breadth and depth of training within the inspection service continues to undermine the program's credibility within the scientific community and the public's confidence in Federal enforcement of the Animal Welfare Act.

Effective enforcement of the Act is a difficult task that demands significant expertise in behavioral and psychological variables, and laboratory animal medicine for the various species of animals used in research. APA is particularly concerned about how APHIS will assess the psychological well-being of non-human primates used in research. This is mandated in the 1985 amendments to the Act and the research community anxiously awaits APHIS interpretation. It will surely require inspectors to make sophisticated judgements about animals with little, to no, specific training in the behavioral sciences. Training inspectors to adequately judge the psychological well-being of primates will be costly, time consuming, and require frequent re-training to take advantage of the latest scientific information.

RECOMMENDATIONS

APA, as well as other scientific and animal welfare organizations, strongly urge that $12 million be appropriated to APHIS's animal welfare program to help maintain a consistently high quality inspection program. This funding is required if APHIS is to fulfill its responsibilities under the Animal Welfare Act.

In recent years, this Subcommittee has preserved the APHIS animal welfare program, despite efforts to eliminate or substantially reduce its responsibilities. You recognized the need for a Federal program to enforce national standards of laboratory animal care and use. APA now asks you to provide funds not only to preserve the status quo, but to assure APHIS's ability to enforce valid and consistent standards.

APA recommends that $12 million be appropriated for FY 1991 for the APHIS animal welfare program to:

1) Ensure that an adequate number of inspectors are available to inspect the over 6,900 registered and licensed animal facilities -- especially the 1,300 research facilities, and;

2) Provide the vitally needed training of APHIS inspectors, especially in the behavioral sciences, to ensure that adequate evaluations are made of the several species of animals used in research — especially non-human primates vital to many areas of biomedical and behavioral research.

APA shares with the rest of the research community a commitment to a strong animal welfare program. We believe a vital component of this commitment is an adequately funded animal welfare program at APHIS.

AMERICAN SHEEP INDUSTRY ASSOCIATION

STATEMENT OF PIERCE MILLER, CHAIRMAN, LEGISLATIVE ACTION COUNCIL

On behalf of the American Sheep Industry Association, I wish to express our support of the Animal Damage Control Program administered by the Animal and Plant Health Inspection Service - USDA and the Administration's proposed FY 1991 budget increase of $2.2 million for that program.

The American Sheep Industry Association (ASI) is a federation of state member associations representing over 125,000 sheep and Angora goat producers in this country. The ASI was created in 1989 through the merger of the National Wool Growers Association and the American Sheep Producers Council. The history of these predecessor organizations goes back over 120 years and represents the oldest livestock commodity group in the United States.

The loss of animals to predators is one of the most limiting factors in sheep production in the United States. Historically, this problem was concentrated in federal land states where sheep are grazed on open range. Increasingly, however, problems of predator loss have migrated eastward. Today, coyote damage to sheep is found in every state. The problem is growing in some eastern states to such a degree that growth in sheep production is being severely limited. The U.S. sheep industry relies on the Animal Damage Control Program to provide some degree of stabilization and control of predators.

The sheep industry's support for animal damage control is backed up with dollars from sheep producers themselves. In many states, the program is cooperatively financed between federal, state and producer contributions. Great effort is being made to make every dollar stretch as far as possible. For a number of years, replacement of vehicles, two-way radios and other equipment has been postponed because the funds were needed in other areas to maintain levels of predator control. In spite of these efforts, we are seeing sheep losses due to predation in some areas on the increase. Also, states that have not needed a predator program in the past, like Iowa, are now trying to find funding to support a program because of the growing problem in their states.

This helps to explain why the sheep industry was disturbed when we saw such a large amount of the FY 1990 budget increase of over $3.8 million being used for administrative overhead. In that budget, less than $1.0 million of that increase actually became available for field expenditures. At that time we questioned APHIS as to why such a large amount of the budget was going to administration. They explained, in much detail, how the budget was constructed. However, to date, we have not received an acceptable explanation of how the administrative expenditure has made the ADC program more responsive to producer needs, or why such a large administrative load is necessary on a program that should not require a great deal of bureaucracy.

The ASI supports the Administration's proposal for a $2.2 million increase in the ADC budget, with the stipulation that this budget increase be designated for field use, not for administrative overhead. This budget increase is needed at the field level to purchase new vehicles and equipment and to strengthen on-the-ground programs. We encourage Congress to see that these funds are used to strengthen the ADC program at the field level.

We appreciate this opportunity to comment.

AMERICAN SOCIETY FOR MICROBIOLOGY

STATEMENT OF DR. RUDY J. WODZINSKI, CHAIRMAN, COMMITTEE ON AGRICULTURAL, FOOD AND INDUSTRIAL MICROBIOLOGY

Mr. Chairman and Members of the Subcommittee:

My name is Rudy Wodzinski and I am a Professor at the University of Central Florida and Chairman of the Committee on Agriculture, Food and Industrial Microbiology of the American Society for Microbiology (ASM). On behalf of the ASM, I wish to submit for your consideration the following comments on the Fiscal Year (FY) 1991 research budget for the U. S. Department of Agriculture (USDA).

The ASM is the largest single biological life science organization in the world with an active membership of over 37,000. Many of these individuals are engaged in agriculture research and are recipients of awards administered by the USDA. Our comments are directed primarily to the Competitive Research Grants Program and the initiative by the Board of Agriculture (BOA) of the National Research Council (NRC). We also must direct comments to certain areas with the Agricultural Research Service (ARS), and for increased support for the animal welfare inspection program in the Animal and Plant Health Inspection Service (APHIS) of the USDA.

The ASM strongly supports the BOA/NRC proposal, "Investing In Research: A Proposal to Strengthen the Agricultural, Food and Environmental System." The ASM recommends that the full $500 million recommended by the BOA/NRC be appropriated for FY 1991. We do not believe that the $100 million suggested by the Administration is adequate. The Administration's request assumes the burden in all the six research areas that the Board of Agriculture recommended without any real increase in budget. We have calculated that if the current Competitive Grants Research Program were funded at the same level as the National Science Foundation (NSF), it would require approximately $90 million. Additionally, the Administration has earmarked $15 million of the $100 million proposed for FY 1991 for research on a plant genome program. This is a new program suggested in the Administration's budget which is not included in the BOA/NRC initiative. If this endeavor of plant genome is necessary, then an additional $15 million should be appropriated to fund that research area.

We have evaluated the BOA/NRC Program areas from a technical standpoint. We are in complete agreement that all six areas that they suggest, namely: Natural Resources and Environment; Nutrition, Food Quality and Health; New Products, Processes and Value Added; Markets, Trade and Policy; and Animal Systems and Plant Systems, are all necessary if U.S. Agriculture is to maintain its competitive basis in a free market system.

It is important that we continue to invest in agriculture. In the past, the nation's investment in agriculture has produced a system of agriculture that provides cheap, wholesome food and fiber for its citizens. The number of hours that an individual must work to pay for food is the lowest in the world. There are no lines in the U.S. for agricultural commodities. The return on prior investments in research on agriculture continues every hour of every day. It has produced the Green Revolution.

New technological development in the Basic Biological Sciences hold the promise for advances in agriculture that will equal or may well surpass those generated by the Green Revolution.

However, despite these significant achievements in our fundamental and practical knowledge of plant and animal systems, there are many technical barriers that must be overcome to achieve and speed up the momentum for using these latest advances in science.

Additionally, the lead that the U.S. has in agriculture is eroding. Many countries have implemented the agricultural practices developed in the U.S. and have become self-sustaining in their food production. Exports are declining. New discoveries in the biological sciences promise significant improvements in the production, quality and safety of food products. Many countries, including some developed and most developing nations, have recognized and invested in that potential. They are gaining the capacity for expanded production and lower per unit cost for agricultural products.

The consumer in the U.S. is seriously questioning current agricultural practices such as the use of pesticides and the effect of agriculture on water quality. New regulations in these areas may negatively influence yield and unit cost of food and fiber production.

The international and national signals must not be ignored. New technology must be developed if the U.S. is to remain as the leader in agriculture. This can only be ensured by an investment in fundamental agricultural research.

A recent publication by NSF, "Profiles-Agricultural Sciences: Human Resources in Funding" (NSF89-319), summarizes the current status of trained agriculture scientists. Twenty-five percent (25%) of the agricultural scientists in this country are over 50 years of age as compared to twenty (20%) for all other sciences. Twelve percent (12%) of the agricultural scientists are between the ages of 40-49 compared to twenty-four (24%) of all other sciences. Agricultural sciences has a higher age population and many will retire soon. These figures indicate that there will be a shortage of agricultural scientists for the available jobs in federal, academic and private research laboratories. They also indicate that a high proportion of present day agricultural scientists are probably not trained in modern technologies. This situation must be rectified. The same situation exists for the scientific equipment and infrastructure necessary for performing research in agricultural sciences.

Since 1978, the Competitive Research Grant Office (CRGO) has performed in exemplary fashion. It has proven that it manages the competitive grants for agriculture in a fair and unbiased manner. It has also been shown in all facets of federally funded fundamental research, that competitive grants is the vehicle that provides research ideas and the mechanism to produce highest return for money expended. The ASM is in agreement with the National Academy of Sciences recommendation that an INITIATIVE in fundamental research in agriculture should reside in CRGO and that CRGO should be elevated as the fourth major Science and Education Agency within the USDA. Administration should be on an equal footing with the administration of the Agriculture Research Service (ARS), the Cooperative State Research Office (CSRS) and the Extension Service (ES). We believe that a fourth agency is an absolute requirement if the integrity of the Initiative proposed by BOA/NRC is to be maintained. The administrators of CRGO must have the freedom to administer the content of the program. The priorities must be made by utilizing the input from the entire scientific community if the opportunities, needs and challenges of agriculture are to be met. This can only be accomplished if the content is to be reflective of national priorities but not subjugated to the missions of other agencies within USDA's Office of Science and Education.

However, it is absolutely necessary that the Initiative within CRGO be coordinated with the needs of other agencies within USDA. It should be possible to accomplish these ends since CRGO has the prime (but not the sole) responsibility for fundamental agricultural research; CSRS would be responsible for satisfying local and state needs; ARS for development of agricultural needs and specific target missions and ES and CSRS for technology transfer. It should also be possible to coordinate the programs by making certain that ARS and ES bench scientists serve on appropriate program panels as is currently practiced. Additionally, ARS and ES scientists should be permitted to compete for CRGO research grants as is currently practiced.

We believe that if the BOA/NRC Initiative is fully funded, that it will provide the fundamental knowledge and training that will increase the Nation's capacity to produce quality food and fiber in an economically competitive manner which conserves resources and preserves the environment. Funding of the BOA/NRC Initiative will strengthen the agricultural, food and environmental system to meet the challenges that confront U.S. agriculture on a global basis. More importantly, it will provide the fundamental research needed to overcome technical barriers to achieve and speed up the momentum for using the latest advances in science to benefit the U.S. agricultural system.

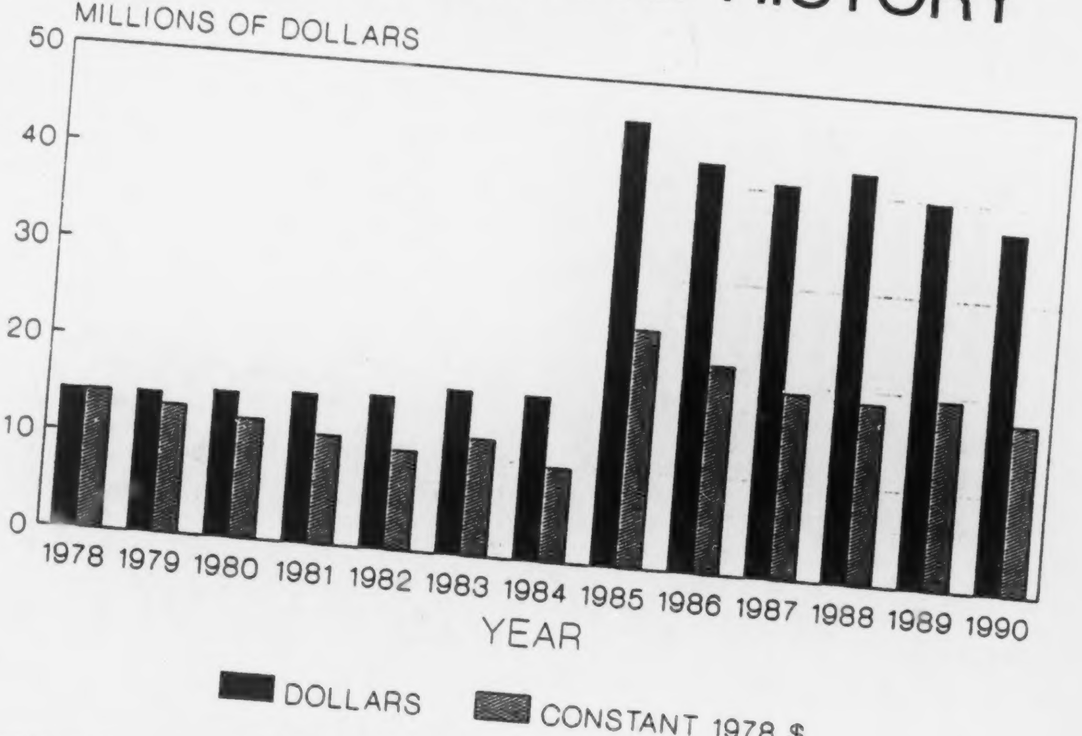
The American Society for Microbiology also strongly supports and recognizes the need for expanded research by the ARS on food safety. In May 1989 the Institute of Food Technology published the results of a workshop with a consensus agreement by a number of professional societies that the number one problem in food safety was with the microbiological aspects of food. They stated that this problem was greater than any pesticide threat. The issues that have raised because of contamination and various processes with salmonella and other microbiological contaminants and especially with mycotoxins in food grains and feed grains emphasize the need for an expanded research role in food safety by the ARS. The American Society for Microbiology supports the need for a $10.8 million increase in food safety within ARS for research on these important problems.

The ASM wishes to call attention to the special report by the NSF (NSF89-319) which documents that agricultural scientists have a significantly lower salary than other life scientists and a significantly lower salary than all scientists. It is our understanding that ARS has a real problem keeping top notch scientists and a very severe problem when recruiting new scientific personnel. The high level of research and the training that is required to perform research in agriculture in the 1990's does not differ from that required for other life sciences. The low salary scale within ARS as compared to private industries and universities should be rectified. We suggest that the Congress implement a program to assure that the ARS is competitive in scientists salaries with private industry and the universities.

The ASM does not believe that the $8.7 million budgeted for Animal Welfare by APHIS is adequate. It recommends that Congress Appropriate $12 million to USDA's Animal Plant Health and Inspection Service for enforcement of the Animal Welfare Act. This modest increase in funding is urgently needed to carry out the Animal Welfare Program responsibilities which Congress assigned to the USDA.

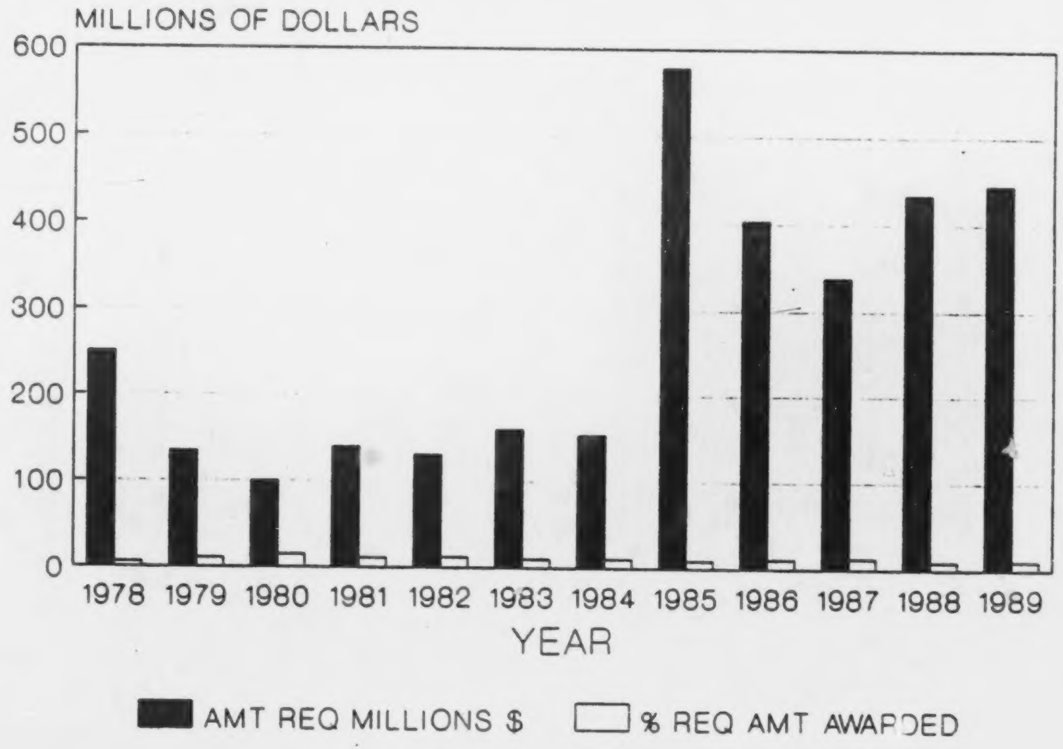
In summary, we strongly recommend that the $500 million proposed by the BOA/NRC be implemented and funded. We also recommend that the initiative in ARS on Food Safety be funded and that the ARS be made competitive in salaries. Finally we recommend that the APHIS Animal Welfare Program be funded at a level that permits them to carry out their Congressional mandate.

CRGO FUNDING HISTORY



ADJUSTED WITH OMB GNP DEFLATORS

FUNDING PRACTICES IN CRGO (FY 1978-1989)



SOURCE USDA

AMERICAN SOCIETY FOR THE PREVENTION OF CRUELTY TO ANIMALS

STATEMENT OF BARBARA PEQUET, DIRECTOR OF GOVERNMENT RELATIONS

The American Society for the Prevention of Cruelty to Animals (ASPCA), on behalf of its approximately 400,000 contributors nationwide, appreciates this opportunity to submit comments regarding funding for two programs: the USDA's Animal and Plant Health Inspection Service (APHIS) for enforcement of the Animal Welfare Act, and the Low-Input Sustainable Agriculture (LISA) program.

Founded in 1866, the ASPCA, America's first humane society, is a private, not-for-profit corporation currently operating animal shelters, veterinary hospitals, humane law enforcement, education and legislative programs, and an Animalport at John F. Kennedy International Airport that cooperates very closely with the Animal and Plant Health Inspection Service. We are dedicated to securing protection for all animals and preventing unnecessary pain and suffering to them whether they be in the wild, laboratories, zoos, circuses, or other exhibitions, kept as pets, or raised for food. And it is because of these deep concerns for the care and protection of all animals, including those protected by the Animal Welfare Act and raised for food, that I am here today to urge Congress to appropriate $12 million for APHIS and $50 million for the USDA's Low-Input Sustainable Agriculture program.

The Animal Welfare Act and its vital need for funds for enforcement efforts.

As this Committee well knows, the Animal Welfare Act is the only comprehensive law protecting warm-blooded animals used in experimentation, in exhibitions, and for a companion. The law, first passed in 1966, has been amended three times since then and presently covers four types of institutions: dog and cat breeders; transporters and carriers of animals; research facilities: and, zoos, circuses, roadside menageries, and other exhibitors and handlers of animals. Specifically exempted from the protection of this law are pet stores, state and county fairs, livestock shows, rodeos, dog and cat shows, exhibitions intended to advance agricultural arts and sciences, and any animals used to advance the production of food and fiber. Contrary to some people's understanding, the law does not prohibit painful or abusive uses of animals; it merely asks that "minimum requirements for handling, housing, feeding, watering, sanitation, ventilation, shelter," adequate veterinary care, and separation of the species be observed.

The Animal Welfare Act has the significant capability of improving the living conditions for animals in many settings. In light of the 1985 amendments, which require exercise for dogs, and housing for primates which addresses their behavioral and psychological well-being, it is very important that these requirements be met. That happens only where there is strong and aggressive enforcement of the law. Unfortunately, it appears that one out of four animal dealers licensed under the Animal Welfare Act were never inspected in 1989. In fact, there seems to have been a decline in 1989 in the average number of inspections conducted at the over 9000 registered research facility sites, animal dealers, exhibitors, and intermediate handlers and carriers covered by the law. It appears that the average number of visits per site was just over one per year. With funds sufficient to provide only 54 inspectors for the over 9000 sites, it is not surprising that Animal Welfare Act enforcement is as weak as it is.

In addition to a general increase in all enforcement measures, from licensing and inspection to reinspection and the levying of fines, there are three areas where the ASPCA would especially like to see APHIS step up its enforcement efforts.

1. Entertainment Animals -- Performing animals, those used to entertain and amuse us, are among the most abused and misused animals in our society. The physical, social, and behavioral needs of these animals are often ignored. Circuses, roadside menageries, and animals in acts and entertainment events are often kept in confining, small cages or transport vehicles, where food, water, exercise, and appropriate temperatures are provided only sporadically. They may be forced to perform physically uncomfortable and behaviorally unnatural tricks such as riding motorcycles, diving into water from great heights, or standing on two legs. The state of the art for training movie, television and other performing animals is too often physical punishment, intimidation, and deprivation. Even where more humane training techniques are used, many species suffer great stress during the training sessions. And many animals are drugged to make them docile and manageable, or are forced to perform by the use of electric prods, muzzles, or whips.

At a minimum APHIS must aggressively enforce the humane standards for the care and handling that presently do exist to protect these poorly used animals, and adequate money is needed for these necessary enforcement measures.

2. Non-Agricultural Farm Animals -- Within the past year, APHIS has stated in writing that it would issue new regulations to correct a long-standing misinterpretation of protections which animals are entitled to be provided by the Animal Welfare Act. As a result, all animals which could be raised on farms and could be used for the production of food and fiber, but in fact are being used in non-agricultural experimentation, research, testing, or exhibitions, will also be entitled to the same minimum requirements of care and handling as other warm-blooded animals similarly used now receive. Although it is not expected that these additional animals will significantly or even modestly increase enforcement costs, APHIS will need to have additional moneys for these efforts and must know that Congress supports them in their efforts to rectify an administrative or regulatory mistake.

3. Birds, Rats, and Mice -- We particularly request the Committee's assistance in directing funds to correct another and very significant misinterpretation of the Animal Welfare Act.

Despite these facts, the Animal Welfare Act is the only federal statute to protect animals used in all research facilities; the Act was amended in 1970 to include not just a few species, but all warm-blooded animals used in research; and, an estimated 90 per cent of the warm-blooded animals used in research are rats and mice, the Secretary of Agriculture has used his discretion to exclude rats, mice, and birds from the humane care and treatment requirements which apply to other warm-blooded animals used for research. Increased public concern over the welfare of these excluded animals has resulted in HR 2766, a bill introduced by Congressman Towns (D-NY) to amend the definition of the scope of the Act to specifically include rats, mice, and birds.

In the preamble of the final rules to the 1985 amendments to the Animal Welfare Act, published last August, the USDA states that it has the authority to regulate laboratory-bred rats and mice used for biomedical research and testing, and that the agency is considering doing so. The ASPCA believes the USDA must, in fact, begin to protect these animals as quickly as possible rather than perpetuate a kind of arbitrary discrimination against certain species clearly intended by Congress in 1970 to be protected. We urge this Committee to appropriate funds for these currently overlooked responsibilities and to stipulate to APHIS that moneys should be so used.

LISA Program Needs to be Funded for Alternative Animal Agriculture

The ASPCA requests that the Low-Input Sustainable Agriculture or LISA program be funded at a $50 million level for FY 1991.

The LISA program makes money available to farmers and ranchers committed to the development of sustainable methods of farming that protect the environment, the health of the consumer, and the economic viability of the farming industry.

It is a small project receiving only $4.45 million in appropriations for FY 1990, but represents a well-planned, well-executed program that could be a model for the USDA. The program allows for contributions by teams of farmers, private non-profit organizations, university research staffs, and public agencies which together review proposals. In addition, there is a system for the dissemination of information through the USDA Cooperative Extension Service to farmers who might benefit from the findings of a sustainable agriculture program. The result is a broad-reaching and participatory program.

The LISA program could and should be expanded to include animal agriculture by supplying money to the farmers for the development of systems that rely less on the use of subtherapeutic antibiotics and other drugs in the raising of animals for food. The ASPCA recently commissioned a report on the relationship between intensive animal husbandry practices and food safety. The report details serious food safety and other hazards created by intensive methods of raising animals. It reviews the current practices of raising veal calves, poultry, hogs, and other animals and documents the health problems for both the animal and the consumer as a result of these practices. The report's findings are corroborated by recently disclosed instances of milk tainted with sulfur drugs and fancy veal containing high levels of antibiotic residue. By increasing the funding available to farmers through the LISA program, there is a better chance that alternatives to these drug-dependent animal farming methods could be perfected.

One animal agriculture program currently funded through LISA is the alternative swine operation at the University of Minnesota. The animals are provided with straw bedding, solid floors, and room to move around with a minimal use of drugs and no antibiotics. The ASPCA hopes that more programs of this sort are funded, but the current appropriation of $4.45 million is not enough. This figure represents less than one-half of one per cent of the total federal funding for food and agriculture research and education. Funding at $4.45 million allows only 13 per cent of the projects that meet funding requirements to receive money.

Critics of LISA state that few farmers participate in the program and benefit from the projects and, therefore, the low funding levels are justified. The ASPCA believes the lack of funds itself has precluded broader participation and that without an increase in the funding commitment by our government, new and innovative sustainable agricultual programs will never be a reality. We can only speculate about profitable and innovative programs and ideas that have been left undeveloped due to the lack of funding.

The direction of the country's agricultural programs must reflect the challenges of today. We must be sensitive to the need to conserve natural resources, and protect the environment and the health of the public by promoting innovative research and edcuation into new methods of agricultural production. The ASPCA feels that appropriating $50 million for the Low-Input Sustainable Agriculture program will help meet this goal.

AMERICAN SOCIETY OF AGRICULTURAL ENGINEERS

STATEMENT OF DR. JOHN N. WALKER, P.E., PRESIDENT

Mr. Chairman, I am John N. Walker, President of the American Society of Agricultural Engineers (ASAE). Our Society is a professional and technical organization of 10,000 members worldwide, who are dedicated to the advancement of engineering applicable to agriculture and other biological systems, including the environment and natural resources, and associated industries. Our members are the people who turn ideas into the systems and equipment for society to use.

The purpose of this Testimony is: 1) to confirm the importance of this initiative; 2) to emphasize the need for a balanced approach for the funding; 3) to address the need to increase authorization up to $500 million or to authorize sufficient funds to adequately carry out this national initiative.

The report of the National Academy of Sciences calls for a bold new research initiative for agriculture. It documents the broad societal issues that are critical to this major U.S. industry and to every citizen of this country. These issues include: 1) restoring and protecting our natural resources and the environment; 2) maintaining and enhancing the competitiveness of U.S. agriculture in the international market place; 3) assuring the dietary health and well-being of our citizens; and 4) making an investment in the future well-being of the country through excellence in science and education.

President Bush's budget for fiscal year 1991 includes $100 million in the USDA/CSRS budget for the National Initiative for Research on Agriculture, Food and the Environment. However, this amount represents just partial funding and includes only four of the six proposed program areas contained in the National Academy of Science report.

It is ASAE's position that it is vitally important to fund implementation of the proposal with a holistic approach that balances investment in all of the six program areas.

Research in practices to manage our "Natural Resources and Environment" must be accompanied by engineered systems. Particularly in the Water Quality and Management Initiatives, it is essential to engineer processes and procedures to reduce the risk of contamination and to integrate systems to increase total water yield while conserving water supplies and preventing soil erosion. A third of our engineering members are working in projects to sustain agriculture, to conserve soil and to protect our biosphere.

For the total program to be effective, funding should be provided for engineering in the "New Products, Process and Value-added Area." There is great potential for engineering development to bring new agricultural products to the commercialization stage and to devise systems that will add value to U.S. agricultural commodities. To realize this potential, the United States must invest in the engineering and research necessary to transform knowledge into useful products and services.

We believe strongly that our nation's best interests are served by investing in competitive grants for all six research areas identified in the National Academy of Sciences' report. This National Initiative is substantially different from previous programs. The expanded competitive grants program will provide better balance, basing new funding on relevance and quality in the six research areas. It is imperative that the initiative funding contain a component for engineering products and processes.

Engineering, when integrated with the multi-disciplinary teams called for in the study, will design the applications that result in a more competitive agriculture. This multi-disciplinary team approach is key to the success of the research effort.

Finally, we are highly supportive of the USDA's program plan for the $500 million per year initiative implementing the recommendations of the National Academy of Sciences. We believe that the funding level must be at levels higher than those proposed by the administration. The needs of the agricultural community and the citizens of this country demand full implementation of the plan in all six areas of research in FY 1991.

ASAE considers it a privilege and a responsibility to join the Coalition for Advancement of Research on Agriculture, Food and Environment (CARAFE) in urging Congress to increase the authorization for competitive grants to fully support the national initiative.

On behalf of all of the 10,000 members of ASAE, I want to express appreciation for the opportunity to provide this testimony on a very critical issue.

AMERICAN SOYBEAN ASSOCIATION

STATEMENT OF MARILYN JORGENSEN

The American Soybean Association is a national not-for-profit organization representing U.S. soybean farmers with members in 29 states. ASA seeks to increase the opportunity for U.S. farmer profitability through its market development, research, public affairs and trade policy programs.

This year, agriculture stands at a crossroads. With the development of the 1990 Farm Bill and the Uruguay Round of the GATT negotiations in the works, policies are being made that will shape the future of U.S. agriculture. In addition, world events over the last year have opened up tremendous opportunities for farmers in the United States. This year, as never before, properly funded programs must be in place to allow the U.S. farmer to compete and profit in a rapidly changing world.

Agricultural Research

A good program of agricultural research is the foundation of U.S. agriculture. A solid research and information distribution system is vitally important in enabling U.S. farmers to compete in today's international marketplace.

Each year, ASA's farmer-members review the research needs of soybeans and invest their own funds through farmer-controlled state checkoff programs. We are making a greater commitment toward research and promotion this year by seeking a national checkoff program which we hope will soon be enacted by Congress.

In 1989, soybean checkoff funds were used to fund or expand 291 soybean research and extension education projects. However, while U.S. soybean farmers are offsetting some of the cost of soybean research, they cannot do it all. The needs are so great that federal funding of soybean production research and new use research is essential to a healthy soybean industry.

In 1988 - the latest year for which complete financial records are available - public funding for soybean research totaled $66.4 million. Federal support accounted for 52 percent of the total, with state appropriations, grants, product sales and industry support making up the balance.

Although public support for soybean research has increased slightly each year, the annual increase, when adjusted for inflation, is not keeping pace with the cost of doing business. Research challenges are far greater than available funding.

The President's recent proposal of a $100 million to fund the first year of a major initiative for research on agriculture, food and the environment is a step in the right direction. However, soybean farmers have some concerns with the proposal.

In a study released last year, the National Academy of Sciences proposed that research support for agriculture, food and the environment be increased by $500 million annually. However, the Presidential initiative reduces the total amount to $100 million, including funding of the continuation of the current competitive grants program at $42.6 million. Therefore, the National Initiative is only $57.4 million in new monies.

While ASA is supportive of the concept of the President's Initiative, soybean farmers believe the Initiative should be entirely funded with new federal money and not adversely affect existing grants programs. As a member of the Coalition for Advancement of Research on Agriculture, Food, and Environment (CARAFE), we support an appropriations level of $150 million for FY 91, including $107.4 in new monies.

The Administration's budget also proposes an increase of $52.5 million to continue and expand water quality programs. The major objective of the Initiative is to provide farmers, ranchers, and other land managers with the information necessary to voluntarily adopt improved, environmentally-sound management practices which to not sacrifice profitability. ASA supports this objective and the need increased funding.

Soybean farmers want sound environmental policy, based on scientific facts, which allow them to produce in a competitive marketplace in a profitable fashion. We support that USDA-proposed funding of $4.5 million for low-input sustainable agriculture research if tied to Integrated Crop Management. In other words, we must be sure that research considers all production factors for long-term sustained productivity, profitability and ecologically sound consequences.

Public concerns for the environment, food safety, diet and health are requiring ever increasing amounts of research funding. However, funding for environmental research should not be at the expense of soybean applied production research. Without adequate financial support, soybean farmers risk losing research programs in needed areas of tillage, weed control, pest control and varietal development. These basic needs are vital to improve farmers' abilities to compete in both domestic and export markets.

Major emphasis needs to be placed on research to increase the competitiveness and profitability of U.S. soybean farmers. U.S. researchers are finding it difficult to obtain adequate funding for production and composition research while our South American competitors are directing their funding and personnel into lowering the cost or producing soybeans. If we don't do something to catch up, we'll soon be put out of business.

We must find ways to reduce production costs and improve the profitability of soybean production. Research is needed to increase yields and profits of all soybean farmers. Southern soybean farmers need specific research to boost yields. ASA requests $300,000 to develop a grants program which addresses research and educational programs needed to improve southern soybean production.

In addition, ASA supports funding in the amount of $500,000 to establish a research grants effort in soybean composition research. Funding is needed to expand research on understanding soybean protein/oil synthesis, the negative correlation between protein content and yield, and the genetic and environmental factors influencing composition. Soybeans with greater amounts of oil and protein are needed to meet the demands of the growing world market and increase U.S. competitiveness.

Research in weed and pest control for soybean farmers is also vital. Scientists estimate that more than 20 million acres of land in the U.S. are infested with the cyst nematode. Nationally, soybean producers lost an estimated $600 million dollars in 1989 due to the increased infestation of this pest. ASA supports expanded for soybean cyst nematode research.

ASA also supports new federal appropriations to encourage further development of soybean oil-based printing ink. Soybean oil ink is now being used by 1/3 of the nation's 9100 newspapers, including 1/2 of the 1700 daily newspapers. Use of soy ink is spreading rapidly into the commercial print market. Within the past year, the number of companies producing soy ink for commercial printers has grown from one to at least eight. Research initiatives will help further the usage of this environmentally desirable product. We urge the Committee to increase funding for soybean oil-based ink by $140,000 for a total of $260,000.

The 1990's promise to be exciting times for soybean research. The need to increase production efficiency and profits has never been greater. If the U.S. is to remain competitive in the soybean world market, soybean research must be on the leading edge of science. Funding must be made available for research in areas which will increase the profitability of the U.S. soybean crop.

Export Programs

World events in recent months have opened many doors for U.S. agriculture. The move toward democracy in Eastern Europe, Central America and the Soviet Union creates tremendous growth potential for U.S. commodities, particularly soybeans.

The Soviet Union currently has a protein deficienty of 15-17 million metric tons. This means obvious growing demand for soybeans and soybean products. The issue, however, is whether or not it will be U.S. soybean farmers - or our foreign competition - that meets that demand.

Market development programs funded through the Foreign Agriculture Service (FAS) are essential if the U.S. is to take advantage of the growing opportunities in the world market. Since its inception in 1954, long-term development activity has been the primary focus of FAS. Working with approximately 75 "cooperators" including the American Soybean Association, FAS in partnership with U.S. farmers, has been responsible for increased U.S. agricultural exports in recent years.

With a network of eleven overseas offices working in over 80 countries, ASA is actively involved in meeting the many marketing challenges soybean farmers face. ASA success is due to the ability to combine farmer-invested promotion dollars overseas with FAS funds to make foreign consumers more aware of soybean products. This combination is essential to increasing U.S. soybean farmers' share of the growing world vegetable oil and protein markets.

ASA-sponsored livestock feeding trials in the Soviet Union were first initiated in 1988. The results confirmed that soybean ration significantly outperformed the traditional ration. Due to the successes of these feeding trials, Soviet imports of soybeans increased from 68,200 metric tons to 830,700 metric tons from FY 87 to FY 88. At the same time, soybean meal imports went from zero to 1.3 million metric tons.

The work in the Soviet Union is only one example of the success of FAS funded projects around the world. Similar stories can be told in Hungary, Romania, Spain, Egypt, Venezuela, China, Korea, South Asia and more.

However, FAS presence overseas has been threatened recently by rising costs. Foreign inflation combined with the devalued dollar have made it difficult for foreign market development programs to continue at the same level. Limited funding have made expanded efforts practically impossible.

USDA has proposed $103.5 million in funding for FAS in FY 91, an increase of $2.2 million over the 1990 level. However, with the tremendous increase in opportunities and the decline in spending power, this level is not enough. ASA supports a funding level of $115 million for FAS. ASA also recommends that USDA increase allocation of human resources for FAS to ensure that programs are carried out efficiently and effectively.

In 1985, the Targeted Export Assistance (TEA) program was mandated by Congress to assist commodities whose sales have suffered because of unfair foreign trade practices. The success of the program has surprised even its supporters.

TEA-funded programs have enabled the American Soybean Association to achieve numerous results:

- In Greece, seven brands of soybean oil are found when none existed in 1986.
- In Italy, ASA's third party cooperator has grown from a small regional bottler to a large diversified manufacturer of soy products.
- In Portugal, significant strides have been made in improving soybean oil quality.
- In Spain, food manufacturers now look to ASA as a primary source of technical information and assistance on the use of fats and oils.
- In West Germany, major institutional food manufacturers identify their products as "soya".
- In the United Kingdom, all the major supermarkets now carry private "own label brands" of soybean oil margarine.

ASA strongly supports continuation of the TEA program with a funding level at the previous authorization level of $325 million annually. Increased funding would allow ASA to continue our work toward improving consumer awareness of soya and soybean oil products.

The potential for future growth in soybean and soybean product exports is great in the developing nations in Asia, Africa and Latin America. Most of these nations want to import more U.S. soybeans, meal and oil. However, many lack the funds and infrastructure to utilize imported commodities.

The export credit programs administered by FAS are essential in promoting foreign consumption of U.S. products. USDA's GSM-102 and GSM-103 programs help stimulate U.S. exports by assuring the availability of bank financing to foreign purchasers. The Commodity Credit Corporation guarantees private bank loans to developing nations for the import of U.S. commodities.

Funding for the export credit programs in the Administration's budget is recommended at the 1990 levels of $5 billion for GSM-102 and $500 million for GSM-103. Since the export credit programs are guarantees rather than direct budget outlays, ASA supports continuation of the GSM-102 program with annual funding authorization at no less than $7.5 billion. ASA supports funding authority for GSM-103 at no less than $1 billion annually, with at least $200 million of the credit guarantees being used to finance needed infrastructure in developing nations to facilitate the more efficient use of imported commodities.

ASA also supports revision of the P.L. 480 Program to make it more oriented to developing foreign markets, to give USDA greater control over the program, and to direct that the program be used to facilitate infrastructure and market development.

The American Soybean Association appreciates the support and leadership of the Subcommittee and looks forward to a continued close working relationship.

AMERICAN VETERINARY MEDICAL ASSOCIATION AND THE ASSOCIATION OF AMERICAN VETERINARY MEDICAL COLLEGES

STATEMENT OF MARCIA D. BRODY

The American Veterinary Medical Association and the Association of American Veterinary Medical Colleges represent nearly 50,000 veterinarians and the entire veterinary medical teaching and research system. Veterinary medicine is committed to improving the health and well-being of animals of all types (including the public health of mankind), and to increasing American agriculture's competitive advantage in international markets. Loss of productivity due to animal disease and death continue to represent a major cost of livestock production and a persistent threat to the safety of America's food supply. The overall national investment in animal health and disease research totals less than one-half of one percent of the annual disease loss suffered by the livestock industry. We invest far too little in the basic research needed for more effective and more economical programs to prevent animal disease.

Summary of Specific Program Requests

- Animal and Plant Health Inspection Service
    - $12 Million for APHIS Animal Welfare Program
- Cooperative States Research Service
    - $5.731 Million for Section 1433 Animal Health Research
    - Support for the National Research Initiative
        - $30 Million for "animal systems research"
            - Including animal health and disease research
            - Including biotechnology on animal systems
    - $329,000 for Minor Use Animal Drugs
    - $10 Million for Water Quality and Management
    - $5 Million for Global Change
    - Higher Education
        - $4 Million for Graduate Training Fellowships
        - $11 Million for 1890 Capacity Building Grants

Animal and Plant Health Inspection Service

AVMA and AAVMC together with a broad coalition of research and animal welfare organizations strongly support a $12 million appropriation for the APHIS animal welfare program and wish to emphasize the need for regular and careful inspections, through training of inspectors and to ensure that APHIS has the management and administrative support to carry out its responsibilities.

We also support the broad range of APHIS programs that protect our animal resources from diseases and pests and preserves their competitiveness in world markets. APHIS serves a critical role in preventing the entrance of foreign animal diseases, promoting effective interstate movement of livestock, collection of animal health information, licensing and testing of veterinary biologicals and programs for eradication of targeted animal diseases. An example of critical need is an additional $4.3 million to undertake a 3 year eradication program on swine brucellosis. We believe that APHIS is doing an excellent job, but they have a serious need for more financial resources and flexibility in program administration.

Cooperative States Research Service

Funding for Animal Health Research (base programs in Section 1433). Seventy-nine institutions in the 50 states are eligible to receive these funds which support research on diseases and pests affecting food animals and horses; wildlife diseases that endanger livestock production; animal diseases transmissible to humans; and the control of livestock predators. These funds are distributed to the states in relation to that state's livestock population and its capacity to conduct animal health and disease research. Each state must match any Section 1433 funds received annually in excess of $100,000. Although these funds comprise less than 3 percent of all federal and state dollars spent on animal health research their importance in promoting research on newly identified and emerging diseases can not be overstated. In these areas they may provide the only immediate source of funds. They also provide seed money for applied research projects to address technology transfer and new applications of technology. Section 1433 also supports ongoing investigation of major health problems plaguing specific animal industries, including Johnes disease in cattle, mycoplasmosis in poultry, and blue tongue in sheep.

The authorization level of $25 million would be well spent. However in order to ensure adequate support for this essential program, even in a climate of fiscal austerity, we recommend only a $324,000 or 6 percent increase over FY 1990 to a new level of $5.731 million. We are joined in this recommendation by NASULGC. We also want to emphasize that this request is not supplanted by any funds supplied through the National Research Initiative.

Competitive research grants for animal health. Since 1977 Congress has funded competitive grants for animal health research under the Special Grants Section 1414(2)(c)(1). FY 1990 funding for these grants totaled $5.633 million. Although not all special grants are competitively funded, animal health research carried out under this section is peer-reviewed and evaluated in a manner similar to the competitive grants process of Section 1414(2)(b).

Veterinary medicine supports the National Research Initiative concept and the expansion of the competitive grants program. AVMA and AAVMC recommend that Congress fund these grants as part of the National Research Initiative within the $30 million designated for "animal systems research". In this way the importance of animal health research and the quality of the research proposals would allow funding in FY 1991 to be significantly increased above the FY 1990 level.

Should Congress not support the National Research Initiative at the level of the Administration's request, including $30 million for "animal systems research", we urge that this animal health program be continued under either Section 1414(2)(b) or 1414(2)(c) and that the appropriation level be no less than $5.971 million (a $338,000 or 6 percent increase).

Biotechnology. We also believe that the animal component of competitive grants previously identified as biotechnology will be reasonably well served in the $30 million designated for "animal systems research" in the National Research Initiative; however, we are concerned that these critical research programs be continued. If the Initiative is not funded we recommend that increased funding be provided for biotechnology within 1414(2)(b).

Minor Use Animal Drugs (IR-4 Research Program). This has been one of the most useful and successful special grants programs with a visible impact on the animal industry. This program funds the development of drugs for species that would otherwise have no therapeutic agents available. We applaud the Administration's recommendation that these funds be increased to $329,000 for FY 1991 and urge Congress to appropriate the full amount. This 45 percent increase can be easily justified due to the critical effect of this program on a wide array of animal drugs.

Water Quality and Management. Animal health and productivity is closely tied to water quality. Animals not only serve as sentinels to reduced water quality, but also may serve as a source of contamination for water supplies. More research is needed on the role animals play in this regard and we support the Administration's proposal to increase special grant funding of water quality research to $10 million.

Global Change. Animal health and productivity is directly affected by any global change. Climatic change influences the microenvironment of animals, parasites, microbiologic agents, and vectors of disease agents. Though a large body of information exists on tropical animal diseases, we know very little about the changes in animal diseases which may accompany minor climatic change. We urge Congress to add the $5 million dollars recommended by the Administration for research on Global Change.

Higher Education. The recommendation of the Administration that funding of Graduate Training Fellowships be increased to $4 million recognizes the vital importance of this program to agriculture. We urge support at no less than that level and strongly support the NASULGC recommendation of $5 million. We also support the increase to $11 million for 1890 Capacity Building Grants.

Extension Service

While not a Congressional line item we wish to call attention to the Food Animal Residue Avoidance Databank (FARAD) program which ensures the safety of the food supply by minimizing the incidence of harmful drugs and chemicals in foods of animal origin. USDA Extension's service and the cooperating universities have funded this effort since 1983 and it is essential that the program be expanded. It will require approximately $220,000 of Extension funding to carry the 60 percent federal share of this program in FY 1991 and we urge Congressional support of this program which provides critical information to livestock producers, veterinarians, and state and federal food safety officials.

Food and Drug Administration - Center for Veterinary Medicine

We wish to thank Congress for the additional support given FDA and The Center for Veterinary Medicine in FY 1990. Dr. Young designated 27 of the new positions for the Center for Veterinary Medicine and we understand that they have excellent applicants to fill the new positions. For FY 1991 we wish to express our concern regarding the Administration's intent to impose $157 million in user fees for drug applications and inspections. We believe that these user fees are inappropriate and that these activities should be supported through a full direct appropriation for FDA.

Thank you for the opportunity to present our recommendations. We would be pleased to respond to any questions or elaborate on these recommendations.

ASSOCIATION OF SYSTEMATICS COLLECTIONS

STATEMENT OF DR. EDWARD U. BALSBAUGH

My name is Ed Balsbaugh, I am a member of the faculty of the Department of Entomology of the North Dakota State University and am testifying on behalf of the Association of Systematics Collections. First, I would like to thank you Mr. Chairman and the members of your Committee for providing an increment of financial and moral support to the USDA Systematic Entomology Laboratory at Beltsville, MD. Your support has helped elevate this organization to a level more consistent with its important national agricultural mission. As you know, the Laboratory provides vital research and information that is critical to the detection, quarantine, and management of insect pests. The services and research provided by the SEL have a significant impact on our agricultural programs in North Dakota and throughout the U.S. My purpose in coming before you this year is to ask you to continue your support for the Laboratory by providing the remaining $1,500,000 of annualized funds needed to enable the SEL to fulfill its mission and provide the services that are so vital to all of us.

Based on extensive planning and evaluation, the Laboratory has determined that 2 million dollars of annualized funds are required to allow it to supply research and services for all agriculturally critical insect groups. Thanks to your efforts, the Lab's funding has been increased by $500,000. We are most grateful for this support and assure you that the money is being well spent. Productivity in the Lab and employee morale are on the rise. The increased funds have enabled a specialist to be hired to address serious agricultural problems in the pyraloid moths. The incumbent already is involved in biological control research that is targeted at minimizing the damage caused by European corn borer. She also provides identification services and taxonomic expertise on this important group of moths. These moths are very similar in appearance. Detailed systematic research is necessary to provide methods for distinguishing the pests from those species that are a natural part of our native habitat. In North Dakota, this group of moths includes several major pests which are responsible for millions of dollars in damage each year. In fact, no part of the Uniteds States is free from the problems created by this group of moths. There are literally thousands of other species of these moths that could wreak havoc across the nation if they entered the U.S. The increased funds also have been used to bolster the level of support to the Lab's other scientists, allowing them to purchase essential equipment, conduct critical field work, speed publication of much needed research results, and cooperate more effectively with workers from around the U.S. and the world. The SEL also has been able to hire 5 new support personnel to aid in the management of the National Insect Collection and to relieve the scientists of some non-technical service and research functions.

In spite of these welcome improvements, the Lab's financial situation is such that the new funds have only begun to address the serious deficiencies that exist. The funding level of each individual scientist is nearly $50,000 below the average of other ARS Labs and the level of technical support, even with the addition of 5 staff, remains only about one third of suppport levels at other ARS laboratories. At the end of FY 90, two scientists covering critical beetle groups will retire and the prospects for replacing them are uncertain. Loss of these scientists will impinge heavily on the vital programs of state departments of agriculture, APHIS, the Federal Grain Inspection Service and other action agencies. Other important positions that were vacated over the last four years also remain unfilled. Today there are 23 research scientists, down from 29 in FY 86. We remain without much needed expertise in leafhoppers, weevils, leaf mining flies, and beetles of significance in forests. The continued lack of this critical systematic expertise represents a major gamble on the part the American people and American agriculture. For example, a new leafhopper pest could be introduced into the U.S. at any time and go undetected. As the Mediterranean fruit fly problem in the West demonstrates, such pest introductions can be costly even with early detection. The appearance of symptoms of new plant diseases, many of which are transmitted by leafhoppers, would be devastating to our farmers, on top of the recent ecomomic stress caused by drought. Our potato crops, our grain, even our ornamentals and shelter belts are potentially susceptible. Reliable identifications of potentially introduced foreign leafhoppers are essential, not only for us in North Dakota, but for the entire country.

Without the work of the SEL, the losses caused by these insects would indeed be the topic of enumerable morning conversations throughout my home state and the rest of the country. This year's banner headlines concerning problems with the Mediterranean fruit fly in California are living testimony to what can happen when a single foreign insect species is allowed to gain a foothold in the U.S. The Systematic Entomology Laboratory provides an absolutely critical link in the chain of events that keep even more of these potentially devastating pests from endangering the livelihoood of agricultural workers throughout America. Time and again, SEL has provided action and regulatory agencies with urgently needed information about possible intrusions of pests. This is an ongoing battle, this year Mediterranean fruit fly, next year, maybe Khapra beetle or Chinese rose beetle or Oriental fruit fly; the list is long and the possibilities frightening. We cannot allow our ability to fight these battles fall prey to financial neglect.

The well being of the Systematic Entomology Laboratory is an issue of concern to many agriculturalists throughout the country. Over the last 4 years, our efforts have been supported by individuals from over 32 states and have included resolutions from such important agricultural organizations as the National Plant Board, the National Association of State Departments of Agriculture, and the Entomological Society of America. It is obvious that this is a problem that affects all states and all parts of our society. As such, I hope that every member of the Senate will view this as part of their special responsibility and aid us in solving a need that impacts all facets of American agriculture.

BARNES-AASTAD SOIL AND WATER CONSERVATION RESEARCH ASSOCIATION, INC.

STATEMENT OF WILLARD R. MICKLISH

As active board members of our association of concerned farmers and agri-businessmen, we speak to the problems of agriculture in the northern Corn Belt. Our interest in conserving the nation's soil and water resources prompts us to support USDA-ARS research in soil and water conservation and in particular of the ARS research conducted at the North Central Soil and Water Conservation Research Laboratory, Morris, Minnesota. The research program is directed at national and regional concerns that assist farmers in improving soil and water conservation and increasing the efficiency of agricultural production. We strongly support the research mission to develop sustainable production systems for northern climates while maintaining and improving the quality of our soil and water resources. The research involves cooperative efforts with the agricultural experiment stations of the University of Minnesota, South Dakota State University, and the USDA Northern Grain Insects Research Laboratory at Brookings, South Dakota.

With increased emphasis being placed on improving water quality in our nation together with continued emphasis on farmer profitability, it is imperative that the research community moves boldly forward to address these concerns. Great risks exist to both our surface and groundwater resources from contamination due to agricultural chemicals, both nutrients and pesticides. At the same time, farmers are experiencing undue financial risks from inadequate fertility during critical plant growth periods and from pests, mainly weeds and insects. It is not simply a matter of applying more chemicals to control pests or eliminating pesticide use entirely because both extremes have serious financial consequences for the public. Obviously, an optimum intermediate solution needs to be attained. Unfortunately, much new knowledge needs to be obtained before such recommendations can be made with confidence.

An analogous point can be made with respect to soil compaction. Practically every acre of farm land in the United States is subjected to wheel traffic of agricultural machinery. There is increasing evidence that this wheel traffic is slowly increasing the density of even our most productive soils. Further more, this compaction often extends deeper than most tillage operations and can persist for several years in spite of annual freezing and thawing. This compaction significantly decreases infiltration rates of water into the soil and leads to increased water runoff. Deep compaction often limits root growth. In periods of water stress, such as we are currently experiencing in much of the Corn Belt and Central Plains, a limited root system contributes to plant water stress and reduced growth. Scientists and engineers at the Morris Lab are working on assessing the economic impact of this soil compaction, and developing ways to balance the negative aspects of farm mechanization against the benefits offered by large efficient machinery.

The Agricultural Research Service in general, and the Morris laboratory in particular, have recently expanded their research efforts in the areas of water quality, pesticide and nutrient management and soil compaction to address current needs of the U.S. public. This has put a serious strain on the physical plant at the Morris Lab in terms of office and laboratory space. In order to continue the productive and relevant research currently being done, and to accommodate increased activity in the above mentioned area, the Barnes-Aastad Association is asking that $300,000 be designated in FY91 to plan an expansion for the Morris Laboratory.

BAYLOR COLLEGE OF MEDICINE

STATEMENT OF D. GAYLE McNUTT, VICE PRESIDENT FOR PUBLIC AFFAIRS

Mr. Chairman and members of the Subcommittee:

It is a privilege to testify before the Subcommittee as we have done each year for the past decade. The ongoing recognition by this Subcommittee of the importance of the work of the Children's Nutrition Research Center and the support you have given now make it a reality.

We are pleased to report to you today that the construction of the CNRC of the U.S. Department of Agriculture's Agricultural Research Service is complete at Baylor College of Medicine in Houston. We are now prepared to fully implement the research programs as directed by Congress and within the scope of the ARS mission.

The completion of the Center's facilities, including the Metabolic Research Unit, has been delivered by the contractor during the current fiscal year and the Fiscal Year 1991 appropriation request includes funds to place this new unit into full operation.

1991 APPROPRIATION REQUEST

Existing budget	$10.4 million
Metabolic Research Unit Activation	$ 4.0 million
Food Bioavailability Unit	$ 2.0 million
Total request	$16.4 million

The CNRC's current budget is approximately $10.4 million, which includes the administrative costs of the ARS, the cost of operating the new $55 million building that houses the Center, and the research programs that have been established incrementally over the past dozen years.

The Fiscal Year 1991 request seeks an additional $6 million to implement the planned program expansion:

—$4 million to fully implement the Metabolic Research Unit (MRU), which involves the controlled study for extended periods of the diet of pregnant and breastfeeding women and their children.

—$2 million to establish the Food Bioavailability Unit, which will study the digestion and use of carbon, nitrogen, iron, and calcium in the same research population by utilizing ARS scientists who will operate a food chemistry laboratory and greenhouse.

The Metabolic Unit: The MRU includes 12 apartments, two nurseries, a state-of-the-art metabolic kitchen, and four recreational areas. This unit will enable families to participate in research activities in a setting that imitates their normal environment. Nutrients associated with growth and development will be fully assessed. The role of diet in the improved care of low birthweight infants will also be studied.

The Food Bioavailability Unit: The Food Bioavailability Unit is a new program that will study the digestion and use of the various nutrient elements in foods eaten by pregnant and breastfeeding women and their children. The program will utilize Agricultural Research Service scientists, who will work in the food chemistry laboratory and greenhouse. They will develop and grow foods labeled with nonradioactive tracers. This program will unite the study of human nutrient needs and agricultural production research.

BACKGROUND AND MISSION

The Children's Nutrition Research Center, created by Congress in 1978, is the nation's only federal facility dedicated to investigating the food needs that ensure health in pregnant and breastfeeding women and in children from conception through adolescence.

Baylor College of Medicine operates the Center for the Department of Agriculture through a cooperative agreement. Texas Children's Hospital is also a cooperating institution in the CNRC's programs, which provide a unique blend of medical, educational and agricultural science. These resources focus on developing scientific standards to provide national nutrition guidelines for the healthy physical and mental development of pregnant women, nursing mothers, infants and children through adolescence.

The ultimate goal of the CNRC is twofold:

1. To assure the best possible health, through sound nutrition, for future generations of Americans.

2. To provide the information to our nation's farmers and ranchers that will allow them to develop the livestock and crop strains that meet the most desirable human nutrition standards.

Research is designed to support the goals of the Department of Agriculture by developing national standards to:

--Evaluate nutritional standards for children, pregnant and nursing women.

--Develop data on how the diet of a pregnant woman affects her health and that of the child she delivers.

--Determine how the mother's nutrition affects her ability to produce milk, the content of that milk, and the health of the child she nurses.

--Assess the relationship between nutrition and physical and mental development.

--Define food needs for healthy growth and development during childhood.

--Establish safe and effective methods for nutrition research.

CURRENT PROGRAMS

The Council of Scientific Advisors, an international panel of recognized leaders in nutrition science, has approved a five-year strategic plan for program development.

These research plans are in accord with the Cooperative Agreement between Baylor College of Medicine and the Agricultural Research Service of the USDA. Currently, research is conducted in three units:

The Metabolic Unit: The Metabolic Research Unit has already established an outreach program that studies the dietary needs of pregnant and breastfeeding women and their children living in their own homes. Scientific data are collected in the home setting of volunteers or through procedures completed at the Center in a single day.

The Stable Isotope Unit: The Stable Isotope Unit enables the study of nutrients in healthy infants and mothers. Stable isotopes are safe, nonradioactive substances that occur naturally in foods. They can be used to trace the path of nutrients in the human body. Investigators in the Stable Isotope Unit have developed ways to determine the nutrients required to produce human milk. Studies are also being conducted in infants and children to determine how the body uses different types of foods.

The Body Composition Unit: Research in the Body Composition Unit is focused on how diet affects growth. Highly specialized techniques are used to assess growth in infants, adolescents, and pregnant and breastfeeding women.

In conclusion, we would like to again express our appreciation for the support of the Subcommittee for the CNRC. Without your faith in this program, its existence would not be possible.

We are also confident that your commitment to improving the nutrition of future generations will prove well-placed and that the research of the Children's Nutrition Research Center will be a source of pride for all of us.

We would be pleased to answer any questions.

CALIFORNIA FRUIT, VEGETABLE AND NUT INDUSTRIES

STATEMENT OF GARY L. OBENAUF, DIRECTOR OF RESEARCH, CALIFORNIA RAISINS, PRUNES AND WALNUTS

We request that funds be included in the FY 1991 appropriations for the Agricultural Research Service (ARS) for final planning for the construction of a new facility in Fresno, California. We do so in behalf of fresh fruit, vegetable, dried fruit and nut industries from the State of California listed in the attachment. In addition, we believe that the Fresno facility provides valuable research in areas that benefit the nation's agriculture as a whole.

The work of the Fresno facility is recognized nationally and internationally for its valuable research and new facilities and equipment are vitally needed to replace old and temporary facilities. The cost of construction of those facilities and specialized equipment is estimated to be approximately $29 million based on a 1993 construction date mid point. The construction of this facility will significantly improve the capabilities of the ARS to provide an even greater benefit to agriculture, not only in the western United States, but nationally. It is believed that $3.5 million in final planning/design funds are needed in FY 1991. These funds are necessary to complete the final planning so that preparations can be made for construction shortly thereafter. It is important that research keep up with the critical issues facing agriculture, such as production and marketing of commodities, air, water, soil quality, research on post-harvest quality of crops, breaking down quarantine barriers, which are essential if we are to sustain and potentially increase both our domestic and export markets.

The Fresno facility is uniquely situated and uniquely qualified to continue and expand the research in these critical areas. However, in order to do so effectively, there is a need to modernize the facilities. Such modernization is long overdue and we wish to fully support this modernization and to communicate the critical importance of doing so to the future of agriculture.

Attached also is a detailed statement demonstrating the need for the new facility and the areas of research.

SUMMARY OF REQUEST

California Agriculture and related industries (listed in attachment) request that the committee include in its fiscal year 1991 appropriations, $3.5 million in final planning and design funds for the Agriculture Research Service (ARS) for the construction of a new facility in Fresno California.

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California Artichoke Advisory Board
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California Beet Growers Association
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California Fresh Carrot Advisory Board
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California Fresh Market Tomato Avisory Board
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California Iceburg Lettuce Commission
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California Kiwifruit Commission
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California Melon Research Board
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California Pear Growers
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California Pecan Growers Association
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California Strawberry Advisory Board
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California & Table Grape Commission
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Citrus Research Board
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Iceberg Lettuce Research Board
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Sun-Maid Raisin Growers
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Sun-Sweet Prune Growers
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Valley Fig Growers
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EXECUTIVE SUMMARY

The Fresno Location of the Agricultural Research Service (ARS) of the United States Department of Agriculture (USDA) is uniquely situated in the San Joaquin Valley of California. Research conducted at the Location is significant, not only to the USDA-ARS, but to the nation. Both the laboratories at the Location, the Horticultural Crops Research Laboratory and the Water Management Research Laboratory, are recognized nationally and internationally for their research activities.

The San Joaquin Valley is the most intensive and extensive agricultural production area in the world and Fresno County, the most productive county in the USA, is considered by many to be the horticultural center of the world. Agriculture production of this Valley is the major source (over 53%) of the U.S. production of many fresh fruits and vegetables and dried fruit and nut crops. The 1984 farm value of these commodities was approximately $16 billion. Export of some of these commodities exceeds 60% of the U.S. production and these commodities, therefore, are significant not only to California but to the nation.

Key issues facing the production and marketing of these commodities include contamination of the air, water, soil, and food produced on these lands. Contamination may be due to pesticides, used either for the production or postharvest processing of these commodities, or to the transformation and/or transport of naturally occurring minerals in the soil. Some hazardous chemicals (i.e., selenium) occur naturally. Pressure to reduce or eliminate these problems will continue from federal and state action agencies, consumers, and environmental groups. The demand for higher water quality by these same groups, and increasing urban, industrial, and recreational uses are placing a premium on water for western agriculture. Recent drought conditions have also intensified these problems. Research conducted at the Location on these problems has and will have national and international significance.

Many of the stone fruit and table grape cultivars now used throughout the world were developed at the Location. The research on postharvest quality and preservation has made new domestic and export markets accessable to a wide variety of horticultural and vegetable crops.

The Fresno Location has contributed a great deal towards providing the national and international consumer with quality agricultural products. Significant advances have also been made in water management, utilization, and reduction of natural or applied groundwater contaminants.

RECOMMENDATIONS

The fresh fruit/vegetable and dried fruit/nut industries and key agencies in water management support new facilities for the ARS Fresno Location.

New research facilities and equipment are needed to replace old and temporary facilities. The cost of contruction of those facilities and specialized equipment is estimated to be about $29 million based on a 1993 construction date midpoint. This will provide ARS with the capabilities to have an even greater impact on agriculture in the western United States and the nation.

USDA-ARS FRESNO LOCATION BACKGROUND INFORMATION

California is the largest producer of fresh fruits and vegetables and dried fruits and nuts in the United States. Many of the commodities could be considered unique to California (i.e., stone fruits, table grapes, raisins, walnuts, lettuce) in regards to U.S. production. There is a continuing and documented need to maintain or increase the quality of western grown produce after harvest and through the marketing channels while at the same time reducing chemical usage (i.e. insecticides, fungicides, postharvest waxes), and residues often associated with them. Postharvest chemicals are routinely used to disinfest or protect commodities, reduce decay, extend shelf life and their marketability and to enhance the visual and sensory appeals in the market place. Increasing regulatory agency and consumer pressure has profoundly affected both the production and postharvest sectors of agriculture. This pressure has also influenced the developers of agricultural chemicals. Unacceptable risks and developmental costs have almost eliminated development of new fungicides and pesticides for postharvest use. All of these factors necessitate the development of nonchemical alternatives to protect horticultural commodities and to provide high quality products without undesirable chemical residues. This pressure is not unique to the U.S. but is found also in most other countries of the western hemisphere. Foreign markets contribute substantially to the economic well being of western states and U.S. agriculture. In order to increase our domestic and foreign markets, the U.S. needs to increase the quality and/or quantity of western agriculture products reaching the market place. New export markets need to be developed in all the Pacific Rim Countries such as Japan, the Far East, New Zealand, Australia, and South America. New markets also need to be developed for agricultural products in other parts of the western hemisphere. Often these markets are difficult to open because of chemical residue tolerances that are difficult for U.S. exports to meet. In addition, quality deterioration may occur because of long transit times required to reach these markets. We must therefore, through research, increase our competitive edge by increasing product quality, reducing or eliminating residues, increasing market life, and decreasing production and postharvest costs. New and innovative methods will be required to meet these challenges.

The farm value of all California agricultural products in 1984 was almost $16 billion at the farm gate, or about 11% of the total U.S. production. The total value of California agriculture, including postharvest handling, processing, transportation, or treatments for pest control approaches $53 billion annually. Agriculture is the largest employer in California.

California produces about 53% of the nation's fresh fruits and vegetables and dried fruits and nuts. For many commodities, over 20% of the production is exported; some can reach 60%. This provides a significant contribution to the economy of California and the nation's balance of payments.

One of the key issues facing agriculture in general is the real or perceived impact of pesticides on the consumer and the environment, whether they be used in production agriculture or after the commodities have been harvested. Chemical preservatives (i.e., fungicides, fumigants) are routinely used to preserve the quality or extend the market life of the high quality products derived from western agriculture for sale domestically or in export markets. The objectives of postharvest research in ARS are to increase product quality, open more domestic and export markets, extend market windows, and reduce the amount of chemicals used in order to protect the consumer. Many areas of research to meet these objectives can be envisioned such as alternative methods for controlling spoilage organisms, (i.e., on biological control) new and innovative methods to extend market life, development of alternative strategies to fumigants for breaking down quarantine barriers, and the breeding of pest- or stress-resistant varieties or varieties opening up larger domestic and foreign markets by extension of harvest seasons or increased quality.

Of major concern to both the public and regulatory agencies is water quality. Pollution of the water systems is a major national problem, and even more amplified in the western United States because of the diverse and extensive agricultural production sector, the intensity of pesticide use because of acute pest problems (i.e., insects, plant pathogens), and the lack of adequate rainfall to help "clean up" the system and adequately recharge the groundwater supply. Pesticide residues may also be carried over into the marketing channels. Water quality in the West can also be affected by natural components (i.e., salt accumulation and toxic elements such as selenium) which become aggravated by poor water management practices. Because of the continuing and increasing demands (population growth) for water for other than agricultural uses, more efficient schemes of agricultural water management must be devised as well as methods to maintain or increase water quality. Recent droughts have also placed an increasing premium on agricultural water.

As the western U.S. population continues to grow (i.e., approximately 700,000 in California in 1989), the demand for urban water supplies, recreation, and manufacturing increases proportionately. Since most of the inexpensive development of water supplies has already taken place, the potential for acquiring additional water is remote. For example, no new water developments are planned by the State of California in the near future. Agriculture currently uses 82% (27 MAF)[1] of all the water diverted in California. As a result, there is growing pressure by urban and recreational interests groups for agriculture to give up or sell part of its water supply. Research needs to be directed towards maintaining or improving water quality (salt accumulation, selenium, etc.), irrigation efficiency, and reasonable water use with the goals of maintaining productivity and possibly freeing some agricultural water for other water uses.

In arid and semi-arid regions, irrigation causes salts to accumulate in soil. Salts need to be leached out by draining methods and the drainage outflow requires disposal. Since disposal of saline drainage water continues to plague the San Joaquin Valley, research needs to emphasize a solution to this problem. Solving irrigation and drainage problems is vital for the long term survival of irrigated agriculture in California and many parts of the U.S. and for maintaining the stability of many food and fiber crops now being grown predominently in California.

Studies investigating the use of accumulator plants to remove toxic elements from soil and waters have implications for human and animal health which extend throughout the United States (i.e., selenium). If accumulator plant species are identified and water and cultural management methods can be developed to use these species to extract toxic elements from the soil and water, then levels of toxic elements can be lowered in soil and the area can then be safely used for agriculture and other purposes.

In an era when water resource management is vital for economic survival of western agriculture, research needs to optimize plant nutrients/water interaction to ensure the productivity, sustainability, and profitability of agriculture. As our best land resources are quickly being used by new urban, industrial, and recreational developments, the ability to maintain productivity and sustainability on marginal lands in a minimally toxic or nontoxic manner will be vital.

USDA-ARS RESEARCH AT THE FRESNO, CALIFORNIA LOCATION

The USDA-ARS research facility at Fresno is located in the center of the most unique, intensive, and diverse agricultural growing area of California and the United States. Thus, it is in an ideal situation to broach many of the problems associated with western agriculture. The two Laboratories at the Location, Horticultural Crops Research Laboratory (HCRL) and Water Management Research Laboratory (WMRL), have conducted research for years on the key issues facing production and postharvest agriculture in the west. These laboratories are so situated that they can respond quickly to both short and long term problems through their research efforts. One significant example was the development of commodity treatments for disinfestation of Mediterranean fruit flies during the California Medfly crisis in the early 1980's. If tropical fruit flies become established in California and other areas of the West, the Fresno research facilities would be a logical location for research on these destructive pests that have national and international quarantine implications. Many of the advances to increase water use efficiency and quality and increasing the quality of California commodities for domestic and export markets have been contributed by scientists at the ARS facility. The facility is composed of approximately 20 scientists and 55 support personnel, not including visiting scientists, post-docs, graduate and undergraduate students and cooperative agreement employees.

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[1] 1 MAF = 1 million acre feet of water; 1 AC = 326,000 gallons of water.

HORTICULTURAL CROPS RESEARCH LABORATORY

The laboratory is organized into two research units, each having multidisciplinary interests: Commodity Protection and Quarantine Insect Research and Postharvest Quality and Genetics Research. There are six research entomologists and nine plant scientists in the units, respectively. Fields of study include plant physiology, horticulture, plant pathology, packaging and transportation, plant breeding and genetics, insect biology, ecology, and pathology and control of insects by microbes. In pursuit of their research goals, staff members cooperate with other Federal and State agencies, universities and numerous commodity organizations. The research encompasses work on western grown fresh fruits and vegetables, dried fruits and nuts, and insects and disease organisms that attack them. The results of the basic and applied research benefit agriculture and consumers throughout the U.S., because California produce is shipped to every part of the country. Much of the research also benefits other areas of the U.S. having similar crops. Additionally, the research results facilitate expansion of foreign markets because information and techniques that are developed at the Laboratory help maintain quality during the long transit periods overseas and meet quarantine requirements to increase export markets.

WATER MANAGEMENT RESEARCH LABORATORY

The mission of the Water Management Research Laboratory is to: (1) develop advanced water management practices, methods, equipment, and systems to utilize soil, water, and energy resources efficiently and to increase sustainability and crop productivity in irrigated agriculture; (2) evaluate and predict consequences of water management practices on the quality of surface and groundwater; (3) reduce pollution of soil and water by naturally occurring and agricultural chemicals through improved water management; and (4) develop irrigation management procedures for improving agricultural sustainability and environmental health, and conserving irrigation water supplies. The staff consists of four research scientists and their support staff. These goals are met by in-house as well as cooperative research with other private, state and federal institutions having a vested interest in water quality and management. The results of the basic and applied research benefit agriculture and the general public because they improve the efficiency of water use and the quality of the environment under irrigated conditions. Additionally, many of the results obtained can be transferred to other areas of the U.S. and the world where irrigated agriculture is practiced.

The research results from the Location are presented at international, national, and regional meetings and published in scientific and technical journals, USDA publications, and in farm and environmental magazines. Substantial technology transfer projects are conducted to ensure that research results are used properly.

RECENT FRESNO RESEARCH ACCOMPLISHMENTS

Horticultural Crops Research Laboratory

- Developed quarantine treatments and all ancillary data lifting the bans on export of walnuts and nectarines to Japan. Opened a market of $10 million per year for walnuts and a projected market of $10-50 million for nectarines.

- In cooperation with the USDA-ARS Hawaii Laboratory, developed fumigation schedules for fruit flies infesting numerous California commodities, thus allowing interstate and export markets to continue if the insects are introduced to the mainland.

- Through innovative and more rapid breeding techniques, introduced new and novel table grape and stone fruit cultivars providing increased domestic and foreign markets. The value of new cultivars resulting from this research is worth over $400 million annually.

- Developed and patented a formulation of an insect virus as a protectant for dried fruits and nuts against Indianmeal moth (a worldwide pest) in marketing channels.

- Developed much of the data used by industry for the optimum storage and transportation of fresh fruits and vegetables saving innumerable losses to the industry.

- Developed an insect pathogenic nematode for control of Hawaiian fruit flies that provides another alternative for control of the species.

- Contributed significantly to the efficient and reduced use of sulfur dioxide for decay control in table grapes; an industry valued at over $500 million annually.

- Defined the uses of plastic films for maintaining the quality, extension of shelf-life and extended availability of vegetables and fruits.

- Developed alternative technologies for controlling brown rot of peaches.

- Determined the phytotoxic limits of various quarantine fumigation treatments on citrus shipped to domestic and export markets.

Water Management Research Laboratory

- Developed innovative groundwater recharge methodologies for protecting and conserving the quality and quantity of ground water supplies of the San Joaquin Valley.

- Developed management strategies for irrigation and drainage water in central California regions containing toxic levels of elements (selenium) in the soil and drainage waters. For example, recycling of saline drainage water and use of plants efficient in taking up selenium.

- Identified mustard plants as most efficient species in lowering selenium concentrations in soil through plant uptake.

- Developed design and management criteria for highly water-efficient surface and subsurface drip irrigation/fertilization of row and tree crops.

- Developed optimum water requirements for the following major crops grown in the San Joaquin Valley: cotton, tomato, cantaloupe, broccoli, sweet corn, and sugar beets.

- * Developed computerized management techniques for real time control of irrigation systems.

- * Developed instrumentation for electronic measurement of soil water and evaporation.

- * Developed design criteria for low pressure lateral move precision irrigation systems.

COOPERATIVE RESEARCH

Scientists at the Location have cooperated with numerous other ARS, SCS, and APHIS laboratories throughout the United States and Europe. Current or past research also includes cooperation with the University of California Extension Service and scientists at U.C. Davis, Berkeley, and Riverside. Specific Cooperative Agreements have also been funded with the Riverside, Berkeley and Davis campuses. Cooperative projects have or are being conducted also with the California State University, Fresno. The base for this cooperation is very broad covering most disciplines represented at the two Laboratories. Cooperative agreements with other Land Grant Universities such as Texas A&M have also have been implemented.

Scientists at the Location have had numerous cooperative agreements with other U.S. agencies such as the Department of Energy, USDA's Soil Conservation Service and the U.S. Geological Survey. Both Laboratories have conducted research with various private organizations such as water districts and commodity groups. This cooperation, through Trust and Reimbursable Agreements has helped solve specific program needs of the Location on a timely basis. It has also provided windfalls for the Location's increasingly tight budget. Cooperative research has also been conducted with various state of California agencies such as the Water Resources Board and the California Department of Food and Agriculture.

Both Laboratories are recognized internationally for their research activities as indicated by a number of Tri-National and PL-480 Projects and BARD grants with Israel. Scientists at the Location have been asked to collaborate on program reviews of institutions throughout the world. A number of scientists have spent sabbatical leaves at the Location and other foreign and domestic scientists/policy makers frequently visit the Location.

Many of our scientists have attended international meetings and have been involved as consultants with international programs for many agencies. The location is frequently visited by scientists from all over the world interested in water management, postharvest and breeding program.

FACILITIES

In 1985, the USDA-ARS conducted a Real Property Utilization Survey of the Fresno Location. Much of their findings are enumerated below. All available land and facilities at the Fresno research complex are being used to the maximum (General Services Administration control number for this site is 1205-07276). This is evidenced by the need to lease additional building space and the requirement for additional off-station field plots. Many buildings are overcrowded. In all cases, the present buildings constructed in the 1930's are below optimum in regard to floor space available for research as well as the "mix" of projects being conducted at any given time. None meet California seismic building codes. All permanent space was at one time modified to meet laboratory or office requirements. About 30% of the Location staff are housed in these permanent facilities while the rest of the staff is housed in temporary laboratory space composed of converted mobile trailer-office space units. These factors have contributed towards development of design criteria for a new office/laboratory facility to be placed on the newly acquired (1988) 30 acres. The new property, directly adjacent to the

Location, was purchased to increase available space for field plots and the breeding programs, cut down significant off-Location travel for field plots and provide space for construction of planned permanent facilities.

When the Agency was forced to vacate 10,000 square feet of laboratory space at the Fresno airport, dislocated personnel were placed in temporary laboratory trailers at Peach Avenue, remodeled for office/laboratory space. As of 1988, all laboratories and staff in Fresno were consolidated at the ARS Peach Avenue location. The addition of these trailers beginning in 1984 exacerbated an already existing overcrowded situation, both for laboratory space and experimental field plots. Based on an estimated 10 year expected life, many of these facilities will be unusable by 1994. Annual utility costs for the location are approximately $128,000/year or $7,000 per research scientist. These costs point to the energy inefficiency of the present facilities. Shop and storage facilities are still in leased facilities off the Location and present continuous security problems.

The Fresno research facility is strategically located close to major crop production areas and in the center of the State with the most extensive irrigated agricultural system in the world (10,000,000 acres). It is in close proximity to horticultural supplies via packinghouses/agricultural industries — a critical factor since perishable commodities require a very short transit time between harvest and set-up of experiments. Production and processing areas are also nearby. Proximity to the California State University, Fresno and University of California agricultural research centers is highly desirable due to available professional and student assistance and the need for professional cooperation. Proximity to urban areas and airport are also highly desirable because of the large number of local purchases made and numerous air shipments of commodities made annually.

In conclusion, the Horticultural Crops Research Laboratory and Water Management Research Laboratory, Fresno, California, are performing a vital research function for the Agency and the nation. Its present location is strategic to the accomplishment of the ARS research mission.

NEEDS FOR THE FUTURE

RESEARCH PROGRAMS

The previous discussions have indicated the importance of the ARS-Fresno Location to western agriculture. These USDA-ARS Laboratories are in an ideal situation to provide a research base for the modernization and sustainability of agriculture for many decades. The San Joaquin Valley has a unique climate, a diversity of high value crops and differing soil and water types to provide a broad base for research from production through harvest and to the eventual consumer. With the increasing needs for improved environmental quality and human health, both the production and postharvest sectors of agriculture will be required to reduce environmental pollution and undesirable residues in soil, water, air and food. The Fresno Location will make significant contributions to alleviating these pressures. Much of the research conducted at the Location is already geared towards reducing undesirable residues and discovering new and innovative methods to reduce or eliminate the dependence on agricultural chemicals and increasing water and soil quality and efficiency. The lack of many incentives, and the abundance of disincentives to develop new agricultural chemicals for the postharvest arena, justify the need for new and innovative research. The leading forces to bring changes will be the regulatory agencies, the need for consumer and environmental protection, and the need to develop land and water resources.

Horticultural Crops Research Laboratory

In the future, the Fresno Location must be able to identify and research areas of concern to agriculture. The infrastructure now exists, but facilities and equipment are old and not adequate for meeting the challenge ahead. A significant portion of the research at the Horticultural Crops Research Laboratory is directed toward finding alternatives to the presently used post-harvest chemicals, for decay and insect control. Much more research is needed on the use of modified atmospheres and unique innovations in storage technology to preserve and extend quality of fresh and processed horticultural crops, reduce losses, and at the same time provide consumer safety. More emphasis needs to be placed on finding alternative methods to insect control (i.e., biological and microbiological) which will not reduce the value or quality of the treated commodity. The scientific literature is replete with records of insects infesting certain agronomic plants. However, few of the insect-plant interactions have been substantiated. We have developed considerable information on the basic biology of pests preventing export of commodities to certain countries (i.e., Japan). The data have shown that in a number of situations, the commodities are extremely poor hosts at best. These data could be used to support meeting quarantine treatments in lieu of a specific treatment or use of a much less severe treatment. This information would also provide us with a logical baseline to design quarantine treatments that provide security but not overkill as is the case now. In order to accomplish this objective, we need to supplement our present staff with new insect ecologists/physiologists.

Currently, most dried fruits and nuts are disinfested at least once after harvest and before eventual consumption. If not treated, losses due to damage and reduction in quality would be substantial. We need to develop new methods of treating these high-value commodities that do not impart residues or undesirable reductions in quality. Many alternatives already have been developed such as, controlled atmospheres, hot and cold treatments, behavior modifying chemicals, and microbial control agents. In the future, we need to exploit these methods, to make them more economically competitive and determine how they can be used together with other methods. Entomologists from a number speciality areas need to be recruited to meet these needs.

In the case of the plant sciences, we need more basic and applied research on the host-pathogen (decay organisms) interactions in order to identify weak links in the pathogen biology. These weak links can be exploited to develop new or less severe commodity treatments. Little is known about the physiological and biochemical basis of inherited traits such as resistance, susceptibility to various environmental factors and quality. In addition to the present research, extension of our understanding of plant physiology and biochemistry will also provide us with insights into improving fruit quality, storage life and consumer acceptance. Both plant pathology and physiology disciplines need more substantial support to approach these research areas.

Many cultivars of stone fruits and grapes now in commercial use were developed at the Fresno Location. Until the present, most of these cultivars have been developed to increase markets by way of their sensory qualities or increasing the time period for a market. However, we know little about the physiology and biochemistry of what consititues quality. We need to have a basic "understanding" of quality so that we can be more selective in our breeding programs. These data could be used to screen out unwanted germplasm at an early date, thus reducing the time required for cultivar development. This information base would also aid plant breeders in understanding the basic mechanisms of inheritance of important traits and thus provide opportunities for "engineering" these traits into new and valuable cultivars. The biochemical basis of resistance to plant pathogens and insects also is little known in these commodities. Significant increases in these disciplines are needed in order to streamline breeding programs, increase quality, and open new markets.

Water Management Research Laboratory

As soils and groundwater resources are increasingly subjected to the dangers of degradation of quality and long term pollution, the urgency for progress in understanding the interactive physical, chemical, and biological processes of flow and transport in the unsaturated zone continues to rise 1985, water management was selected by the Joint Council of Food and Agric ture as one of the eight national research priorities. Research in water management is critically needed under irrigated agriculture in arid regions where water availability is greatly restricted during periods of drought as recently experienced. Deep percolation of excess irrigation water carrying nutrients (such as nitrates), pesticides (such as DBCP), and toxic elements (such as selenium) degrade the quality of groundwater and irrigation return flows. Bio-accumulation of toxic elements in ponded return flows has caused toxicosis of wildlife and potentially can enter the human food chain.

Excessive deep percolation results in large part from nonuniform infiltration of irrigation water. To compensate for poor uniformity, growers over irrigate the entire field which lowers their application efficiency and causes excessive runoff and deep percolation. Since the cost of reclamation or disposition of drain flow is proportional to its volume rather than its concentration, irrigation practices which minimize or eliminate return flows need to be critically investigated to determine long term effects on physical, chemical, and biological properties of soil, water, and environmental quality in general and in comparison to existing irrigation practices. Soil physical chemists, microbiologists, physicists, and system analysts are needed to perform model evaluation, environmental monitoring, and analyzes under field and laboratory conditions, and to develop methods for reclaiming and preventing further or future degradation of irrigated agricultural areas and their water resources.

NEED FOR NEW FACILITIES

The current facilities are old (many built in the 1930's), not up to codes, and overcrowded. They are being used for purposes not originally intended. Those scientists in the temporary laboratory trailers (11,000 square feet, 10 years estimated useful life) need to be moved into permanent facilities by 1994. Others are housed in buildings that do not meet seismic and other codes which would require major renovation to conform. None of the buildings are energy efficient; many are temporary structures. As mentioned previously a design criteria study by the A&E firm of Leo A. Daly in 1985 was conducted but has not been acted upon. This study indicated the need for major renovations of the present facilities to be brought up to codes. Still the facilities would be substandard for their present use. Taking into account the importance of the Location programs to western agriculture we recommend that the Fresno Location be appropriated the funds for permanent and modern facilities. Purchase in 1988 of 30 acres immediately south of the Laboratory has provided space for the new facilities that would be minimally disruptive to the research programs.

In the light of the above statements, it becomes obvious that the Fresno Location is in desperate need of new facilities if it is to maintain and increase its program productivity in the 1990's. The planned facilities would integrate all of the existing facilities and staff into one energy-efficient facility. The conceptual study completed by Leo A. Daly in 1985 will provide a basis, after review, for architectural and engineering design of the facility. The study provides spatial arrangements of all components of the laboratory based on program needs, common use areas, and linkage of laboratories having similar requirements, and separation of non-compatible research areas (e.g., insect pathogens vs. insect rearing). Energy efficiency will be maximized and common use areas will be located so as to be readily accessible to those who need them. Heavy equipment (i.e., bioclimatic chambers, centrifuges, chromatographs, etc.) will also be isolated to maximize energy efficiency. Gross floor space for the facility, including a research shop and other out buildings, is estimated to be 117,000 square feet. This will provide for an estimated increase in total staff of 25%.

The planned design also provides for specialized facilities such as growth chambers, insect rearing rooms, and greenhouses. Specialized equipment suites for electron microscopes, tissue culture, and other methodologies requiring isolation are also provided.

Total costs of the facilities is estimated to be $29,012,731 (Exhibit 1) accounting for contingencies, inflation and a midpoint of construction in 1993 (Exhibit 2).

In conclusion, the Fresno Laboratories are strategically located close to major crop production areas, agricultural universities, and industries — a requirement for the type of research conducted at the Location. The two laboratories are conducting research of major significance for the Agency and the nation. New facilities need to be designed and constructed so that the Location can expand and intensify its programs as we progress into the 21st Century.

Summary of Areas for Fresno Location Research Facilities

	ft^2 (net)
COMMON USE AREAS	
Common Use, Research Photography, chromatography, media preparation, fruit handling room, etc.	16,394
Common Use, Administration Offices, library, conference rooms, employee welfare room, publication storage, reception, etc.	4,908
Common Use, Location Support Administrative office, purchasing, office supply storage, copy room, computer room, reception area, etc.	1,208
HORTICULTURAL CROPS RESEARCH LABORATORY	
Postharvest Quality and Genetics Research Unit Plant pathology, plant physiology/biochemistry, horticulture, packaging, tissue and embryo culture, plant and histology and anatomy laboratories, greenhouses, miscellaneous preparation rooms, service areas (farm machinery), cold storage rooms, small conference room, offices, etc.	19,275
Commodity Protection and Quarantine Insect Research Unit Entomology, insect pathology, insect physiology, insect behavior, population ecology and genetics laboratories, insect rearing facilities, instrument rooms, media preparation rooms, sterile transfer rooms, temperature control rooms, seriology laboratory, offices, common use areas	15,520
WATER MANAGEMENT RESEARCH LABORATORY Laboratories for wet chemistry, analytical analysis, experimental chemistry, plant physiology, engineering, electronics, cold storage rooms, plant tissue preparation, phytotron, common use areas, offices	12,327
	69,632
Gross ft^2 (net x 1.6)	111,411
Renovation of greenhouses	5,655
Total Construction Area	117,066

Exhibit 1

New Facilities Budget for Fresno Location (1990)[1/]

Planning, design	$ 3,500,000
Construction (93,000 ft² gross) includes lab space, office space, insect rearing facility, research shop, special use areas (i.e., tissue culture), clean air rooms	17,100,000
Demolition of old buildings and clearing of land for return to breeding program/field plots	555,000
Miscellaneous (relocation and reinstallation of equipment from present facilities, etc.)	500,000
Total	21,655,000
Plus 3 years of 4% inflation	24,359,987
Plus 15-25% for facility/program growth	28,012,731
Plus further development of new 30 acres ($500,000)	28,521,731
Specialized facilities and equipment needs: i.e., electron microscopes, analytical equipment, bioclimatic chambers, green houses, phytotrons, safety equipment, isolation rooms, clean air benches, etc.	491,000
Grand Total	$29,012,731

[1/] Assumes midpoint of construction in 1993.

Exhibit 2

New Facilities ARS Fresno Location

STEPS TO BE DONE

	Time Frame
1. Preliminary project criteria (a) Review and update design criteria and relationships Leo A. Daly report	6 month
2. A&E firm reviews Provides functional layout 3. A&E firm provides conceptual design (a) More details (b) Architecture (c) HVAC (d) Electrical (e) Plumbing (f) Etc. 4. Environmental impact statement may be required (a) Approvals by City of Fresno (b) Approvals by State of California 5. Design through final (a) Details (b) Layouts (c) Casework (d) Etc.	2 years
6. Advertising for construction	3-4 months
7. General counsel reviews - construction clauses	

CENTER FOR RURAL AFFAIRS

STATEMENT OF NANCY L. THOMPSON

Mr. Chairman, thank you for this opportunity to provide testimony concerning the loan programs of the Farmers Home Administration. The Center for Rural Affairs is a non-profit organization founded in 1973. The Center has monitored and analyzed federal farm credit policies for the past twelve years--a period of enormous stress in U.S. agriculture and at FmHA. In 1985 and 1987 Congress passed major legislation that has in many respects been effective in dealing with that stress. The 1985 credit title dealt with the needs of existing farmers by appropriating guaranteed loan funds which allowed commercial lenders to stick with their existing farm borrowers through some very tough times. Similarly, the FmHA component of the 1987 Act dealt with stabilizing existing borrowers.

We believe it is now time, however, to thoroughly re-examine FmHA's farm loan programs and to build on proven programs using appropriate innovations to enhance their effectiveness and fiscal responsibility. New FmHA programs must be designed to address a demographic reality we now face. Amost half of the country's farm assets are held by farmers who will be retiring in the next ten years. In recent years, most farm assets sold have been acquired by established farmers or investors. This loss of new-entry farmers and the resulting concentration in ownership of farming assets are not inevitable, but effective FmHA lending targeted to the needs of beginning farmers is essential to assure beginning farmer access to land ownership. The transfer of these assets is an historical opportunity and will be one of the most important factors affecting the social and economic health of the country's agriculturally based rural communities.

We have reviewed the performance of FmHA lending programs, including shelves of reviews and critiques prepared by GAO and the USDA Inspector General's office. We find there are two very clear lessons about FmHA farm lending:

1. FmHA's traditional direct Farm Ownership and Operating Loan programs have been the most successful of all FmHA's farm lending programs. Over the decades, these two programs have created thousands and thousands of new farming opportunities and experienced very low loan loss rates. Unfortunately, this incredible success story currently serves no particular political interest, and it has been completely lost in the last few years' worth of reporting on FmHA's problems. We want to say it now, loud and clear, that these decades-old programs are far and away the most successful of all FmHA's programs from the standpoint of serving both fiscal efficiency and the agency's public purposes.

2. By contrast, as currently designed, guaranteed lending does nothing to assist beginning farmers; the primary effect has been to bolster the creditworthiness of more established farmers and lenders' portfolios. Both GAO and USDA Inspector General's reports have shown that nearly all of the guaranteed loans made in the past few years have gone to existing borrowers of a commercial lender. They have not been used to either graduate direct borrowers to commercial credit or to assist new borrowers obtain commercial loans. As a recently publicized event in Iowa shows, guaranteed loans can be exploited by a lender not only to bolster a bad loan, but to deceive farm -borrowers and precipitate liquidation.

Despite these lessons learned, the Bush Administration's 1991 budget proposal for FmHA is not directed to the needs of beginning farmers. It instead is a blueprint for maintaining an agency which rather grudgingly assists those already in debt to FmHA and provides some assistance, primarily through guarantees, to the established farm borrowers of commercial and cooperative lenders. The proposed budget appropriation levels show little support for or understanding of FmHA's mission or the pressing need for beginning farmer lending. The budget also shows a preoccupation with guaranteed loans with little regard to their limited use in recent years.

Specifically, the Bush Administration's proposed appropriation levels would provide:

1. Combined direct and new subsidized guarantee OL funds roughly equivalent to FY 1988 and 1989 actual use of direct OL funds. Even assuring complete use of subsidized guarantees, this means very few new farming opportunities provided through the OL program because current direct borrowers will absorb most of those funds to continue their operations.

2. Direct FO funds of $38.000,000 with all funds reserved for socially disadvantaged (SDA) borrowers. It is good to see a recognition that FmHA lending has often systematically exluded minority farmers. But just as direct FOs are valuable credit assistance for SDA borrowers, they are also an irreplaceable entry tool for all farmers. Limiting direct FO eligibility to SDA borrowers would be extremely divisive in many parts of the country and would ignore the value of these loans to a wide variety of beginning farmers.

3. New subsidized guaranteed loans for guaranteed loans (FO and OL) estimated to average 3% on a maximum of $400,000,000 in loans per year. At these levels the total interest assistance would be $12,000,000 nationally. This amount would provide little help for borrowers trying to graduate to guaranteed credit or for new applicants who would with adequate assistance be able to get started with guaranteed loans. At the 3% level, these funds would, for instance, permit less than two subsidized guarantees in each Nebraska county per year.

4. Guaranteed OL appropriations of $2,250,000,000. This level would provide a supply of funds far in excess of the demand which can be reasonably anticipated. FY 1988 and 1989 guaranteed OL lending averaged about $900,000,000 despite extensive agency efforts to make more of these loans. The guaranteed interest assistance may add to the demand for these loans, but full use of the $350,000,000 proposed and continued lending of $900,000,000 in unsubsidized guaranteed, would still leave one billion dollars in unused funds. Appropriating funds that will not be used may be politically attractive, but it adds to neither agency effectiveness nor to the number of farming opportunities FmHA provides.

One potentially beneficial part of the Bush Administration proposal is the call for "subsidized guarantees" on $350,000,000 in guaranteed operating loans and $50,000,000 in guaranteed farm ownership loans. This approach can ease the transition from direct to guaranteed credit for FmHA borrowers, and it could get some FmHA eligibile borrowers directly into the commercial credit system. It is not a new idea, though, and unfortunately, it has a history of failure. It was tried without much success in the 1985 farm bill (the "interest buydown" program) and again in the 1987 Agricultural Credit Act (the FCS Demonstration Project).

The history of interest-assisted guaranteed loans indicates that this approach needs careful implementation if it is intended to be anything other than a token program, let alone a program capable of reaching beginning farmers. Nothing in the FmHA proposals show the innovation or attention to detail needed to launch a new program that would make guaranteed loans available to traditional FmHA borrowers including beginning farmers. In fact, the Administration's proposal states that the proposed modification to the guaranteed OL program is designed "1) to facilitate the transition of existing direct loan borrowers to guaranteed loans and ultimately to private sector credit; and 2) to provide a source of assistance to current borrowers of private lending institutions who can no longer continue with those lenders on commercial terms." These are useful purposes for guaranteed OLs but they exclude beginning farmers and small farmers who wish to expand to family size but do not have direct loans.

All of the above indicates a kind of business as usual at FmHA that is not desirable for several reasons. First, FmHA lending has resulted in far too many borrower failures and far too much government losses in recent years. The budget would diminish these failures and losses only to the extent it limits overall lending. The alternative--using FmHA supervised credit to help build viable farming operations which are able to repay their FmHA debt--is nearly ignored. Secondly, the budget proposal would provide almost no opportunities for new farmers to use FmHA credit to start and build their operations.

Contrary to the Administration's budget proposal, we believe earmarked appropriations and new approaches to FmHA lending are needed. These must address the needs of beginning farmers and protect the government's interests. There should be separate and explicit provisions for beginning farmers. The main features of these provisions include:

--"Downpayment loans" which would provide a new mechanism by which FmHA and a beginning farmer would jointly come up with the downpayment for farmland purchase with the main loan being financed by a retiring seller or commercial lender. This approach is farm more efficient than current FO lending because it leverages the same appropriated amount to roughly three times as many borrowers.

--An annual per borrower "subsidy assistance cap" which would be applied to both direct and guaranteed loans. The effect of such a cap would be to concentrate assistance to beginning farmers whose credit needs typically are (and should be) smaller.

--Borrower training would require each borrower to have an understanding of basic farm financial management, and completion of training would be a prerequisite of loan making. Loan assessment should be conducted on each new loan by outside credit counselling services. The analysis would specifically ask: "Can FmHA credit help this borrower acheive this operation's goal within the terms and timeframe allowed by FmHA?" While the borrower training and loan assessment procedures represent a new cost, we believe that increased management skills better assures repayment of FmHA loans.

The chart below contains the actual FO, OL, and EM appropriations for FY 1989 and the appropriations levels we recommend for these loan programs for FYs 1991-93. The levels recommended are designed to allow implementation of the lending program reforms we believe are necessary.

Overall the direct appropriations would be slightly decreased from FY 1989 but would still provide funds earmarked for beginning farmer FO and OL loans. This is possible because the EM appropriation would be eliminated or alternatively lowered to an amount nearer actual EM lending in recent years. While the overall guaranteed appropriation levels are significantly lower than under the 1985 farm bill, they too include funds earmarked for beginning farmers. That is possible because there have been large amounts of unused guaranteed OL funds in recent years. The chart also includes the estimated costs of providing borrower training and assessment for new FmHA borrowers.

FmHA FO, OL, and EM Appropriations (in $1,000s)

FY	Direct OL*	Guar. OL	Total OL	Direct FO	Guar. FO	Total FO
1989	$900,000	2,300,000	3,200,000	95,000	474,000	569,000
91-93	1,300,000	1,500,000	2,800,000	400,000	600,000	1,000,000

FY	EM**	Total Direct	Total Guarantee	Total Direct and Guar.
1989	$600,000	1,595,000	2,774,000	4,369,000
91-93	0	1,500,000	2,100,000	3,600,000

These appropriation levels would reduce overall direct and guaranteed funding, leave sufficient funds to meet the needs of existing borrowers and more established farmers, and still earmark enough direct and guaranteed funds for a significant beginning farmer effort through FmHA.

Proposed appropriations earmarked for beginning farmer loans for FY 1991-93
Direct OL: $400,000,000
Guaranteed OL: $500,000,000
Direct FO: $325,000,000***
Guaranteed FO: $325,000,000
Total: $1,555,000,000

Potential number of beginning farmer opportunities created with these funds (based on FY 1989 and 1990 average size loans):

Direct OL borrowers: 10,000 (10,000 times $40,000 equals $400,000,000)
Guar. OL borrowers: 5,556 (5,556 times $90,000 equals $500,000,000)
Direct FO borrowers: 5,449****
Guar. FO borrowers: 2,449*****
Total borrowers: 23,454

* FY 91-93 proposed direct OL appropriations each include $100,000,000 for natural disaster loans made through and under the provisions of the OL program. Alternatively, separate EM appropriations of $100,000,000 would easily meet the EM demand present in recent years.
** Direct only.
*** Not less than 25% of this appropriation would be used for conventional limited resource FOs in accordance with current legislation.
**** This number represents the increased borrowers made possible because of the new 10% downpayment requirements and an additional 25% made possible because of the leveraging of non-FmHA funds made possible with downpayment loans. ($325,000,000 divided by $82,000- 3963 times 1.10% equals 4,359 times 1.25% equals 5,449 borrowers).
***** This number represents the increased borrowers made possible because of the new 10% downpayment requirements. ($325,000,000 divided by $146,000 equals 2,226 times 1.10% equals 2,449).

Estimated cost of providing borrower training and loan assessment when 23,454 new beginning farmer loans are made
Loan assessment costs: $8,000,000 (23,454 borrowers plus 16,546 unsuccessful applicants equals 40,000 applicants times $200)
Borrower training costs: $7,036,200 (23,454 borrowers times $300)
Limited resource borrower training costs: $4,000,000 (8,000 times $500)
Total costs: $19,036,200

While it is impossible to estimate the exact cost of interest assistance that would be provided on beginning farmer direct and guaranteed loans, a ballpark figure of $64,000,000 should be close to the potential cost. This amount would provide 4% interest assistance on the entire proposed $1.6 billion in proposed beginning farmer appropriations.

The programs we have outlined and the appropriations levels we have recommended are critical if FmHA is going to again play the role in agricultural lending that it has played so successfully for most of its history. A reevaluation of FmHA's mission and the development of programs which enhance rather than ignore the opportunities the agency can create for beginning farmers is essential. We ask that the Subcommittee carefully analyze the Bush Administration's budget proposal and reject the move towards a withdrawal of FmHA's role in direct farm lending. We request that the Subcommittee instead adopt the appropriations levels outlined above so that beginning farmers will have a chance to establish themselves.

Thank you Mr. Chairman for this opportunity to testify.

CENTER FOR TROPICAL AND SUBTROPICAL AQUACULTURE

STATEMENT OF DR. KEVAN L. MAIN, DIRECTOR

Mr. Chairman and Members of the Subcommittee, thank you for the opportunity to submit testimony on behalf of the Center for Tropical and Subtropical Aquaculture, and, by extension, all the regional centers. We appreciate the support the Subcommittee has given in previous years, and present testimony before you today to urge continuation and expansion of that support to the fully authorized level of $7.5 million.

The regional centers are a unique mechanism for coordinating and exploiting the research, development, demonstration and training expertise of the nation as a whole. In direct response to the needs for aquaculture industry development as identified in the National Aquaculture Development Plan, the regional centers work towards expansion of the commercial aquaculture industry. They are distinguished by the specific involvement of industry in project planning and implementation.

The centers are administered by the Department of Agriculture and complement its existing research and extension programs. In the broadest terms, aquaculture is underwater agriculture, not a new science nor arcane enterprise. Like terrestrial farming, aquaculture requires substantial research and development support in order to expand its technical and economic base and realize its full potential.

Situated to take best advantage of regional aquaculture opportunities in the United States, the centers assist industry in developing regionally applicable production techniques. They are programmatic rather than institutional, seeking to become a center of information exchange and regionally-based research and education.

From 1982 through 1987, per capita consumption of seafood had grown an average of 5 percent a year. In 1988 this trend was halted as seafood consumption dropped from 20.2 to 19.8 pounds. Increased prices and food safety concerns, following several incidences of contaminated aquatic environments, contributed to the decline. Although the decline was experienced in consumption of commercial fishery products, aquacultural products remained relatively unchanged. Increased aquacultural production could only benefit the domestic seafood market by providing safe, high quality products at a lower price. The regional center program facilitates this growth by providing research and development support necessary to improve culture techniques.

The centers have been in full operation since 1987. The third year work plan, encompassing a variety of projects, was initiated on March 1, 1990. Continued support was provided for seven projects which are described below:

Aquaculture Effluent Discharge Program. The regulations concerning aquaculture effluent discharge in the state of Hawaii and other coastal states restrict aquaculture development. These restrictions were written before the advent of commercial aquaculture and producers have been forced to comply with regulations designed to safeguard against sewage and industrial waste disposal. In the project's first year, investigators identified, sampled, and characterized effluent discharge from aquaculture facilities in Hawaii. Investigators also determined that conventional water-quality treatment methods do not appear to provide a feasible means for meeting state discharge requirements.

Approval of Drugs to Treat Disease in Shrimp Hatcheries. This project was developed to identify, test and register likely drugs for the treatment of disease in domestic shrimp hatcheries. Significant project results include the FDA's policy not to regulate drugs used in shrimp larval culture. U.S. shrimp farmers will greatly benefit from this change in FDA policy.

Production of Aquaculture Seed for Guam and the Western Pacific Region. This project is supporting hatchery production of prawns, shrimp and rabbitfish seed for commercial producers in Guam and the Western Pacific. As a result of this project, four commercial farms, which had been closed for several years, received prawn seed and resumed operation in 1989.

Library Aquaculture Workstation. The Pacific Regional Aquaculture Information Service (PRAIS) was established and provides immediate access to aquaculture information for researchers and producers throughout the region.

Aquaculture Extension and Training Support. This project supports an aquaculture field agent to provide extension services, seedstock, and on-site training in giant clam aquaculture to five Pacific island nations.

A Market Study of the Pacific Giant Clam Products. In response to the growing expansion of giant clam aquaculture in the Pacific, this project is characterizing the market for giant clams in the U.S., Japan, Taiwan, Hong Kong and Australia.

Demonstration Projects for the Pacific Islands. Establishment of giant clam farms in American Samoa and the outer island atolls of the Marshall Islands and support of a small-scale commercial sponge demonstration farm are components of this demonstration project.

Introduction of Aquaculture to Secondary Schools in Hawaii and the American Affiliated Pacific Islands. This program is designed to introduce aquaculture to secondary schools in Hawaii and the Pacific, and to assist teachers in establishing aquaculture enterprises and research programs.

The scope and variety of these project demonstrate the breadth of CTSA's contribution toward development of the aquaculture industry. We believe even more of a contribution can be made nationwide by funding the regional centers at the fully-authorized limit of $7.5 million. We request your assistance and support for bringing the nation's aquaculture industry to fruition.

Thank you again for the opportunity to submit testimony.

STATEMENT OF ROBERT B. ROBINSON, PRESIDENT, HAWAII CHAMBER OF COMMERCE

My name is Robert Robinson. I am President of the Chamber of Commerce of Hawaii and Vice Chairman of the Industry Advisory Council of the Center for Tropical and Subtropical Aquaculture (CTSA).

As a businessman, I support the regional centers for their ability to make a substantial contribution to the nation's economic welfare. In 1987, the United States was the world's second largest importer of fishery products valued at $5.7 billion. By comparison, the United States exported $1.8 billion, suffering a $3.9 billion deficit. The regional center program provides an opportunity to turn these figures around. The allocation of resources into developing and improving domestic aquaculture would provide higher quality, lower cost fishery products. Under investment, combined with growing world population and declining stock of capture species, could lead to higher prices and increased dependence on imported fishery products.

As a resident of Hawaii and a member of its business community, I have a vested interest in the successes of CTSA. Historically, Hawaii's economy has tended to rely on a few major industries: agriculture, tourism and the military. Although they still constitute a large share of state revenues, the major components of Hawaii's agriculture industry -- sugar and pineapple -- have reached a kind of economic stasis. Consequently, the state has begun to pursue new industries. One of these is aquaculture, which Hawaii considers an important new sector of diversified agriculture.

In the Pacific Basin, aquaculture development has been identified as a priority by territorial governments. A viable aquaculture industry will aide economic development by providing a potentially long-term sustainable enterprise, increase employment opportunities, improve nutrition among Pacific Islanders, and offer the potential for a significant export product.

It is no exaggeration to say that the resources of Hawaii and the Pacific Basin are extensive. We are fortunate in our climate and environment; seawater is obviously abundant and high value aquatic species can be grown year round. We have available to us extensive research and practical expertise in aquaculture through universities, private institutions and the industry itself. CTSA integrates these resources and focuses their direction.

It is my hope that the activities and achievements of CTSA will continue and expand in the years to come. I urge members of the committee to fund the regional centers to their fully authorized appropriation of $7.5 million

STATEMENT OF LINDEN BURZELL, VICE PRESIDENT AND GENERAL MANAGER, AMORIENT AQUAFARM

Thank you for the opportunity to submit testimony on behalf of the Center for Tropical and Subtropical Aquaculture, or CTSA. I am Linden Burzell, Vice President and General Manager of Amorient Aquafarm in Kahuku, Hawaii. I am also Chairman of the CTSA Industry Advisory Council.

Based on my years of experience in the aquaculture business and with aquaculture research, I can confirm the significance of an industry driven program. CTSA allows for and expects industry to provide research priorities and direction for regional aquaculture development. By recognizing the need to integrate industry priorities and scientific research, the Center insures a program that has direct applicability to commercial producers.

of the CTSA project work group to educate government officials on shrimp aquaculture and disease control.

CTSA is proving to be a highly effective mechanism for industry development. Like any business in its infancy, the aquaculture industry has suffered its share of failures. To a degree, that is the nature of business--not everyone succeeds. But an organization like CTSA exists to ensure that everyone has a fighting chance.

My involvement with CTSA has been very rewarding both as a shrimp farmer and committee member. It is my belief that the regional center program will help guarantee the burgeoning success of aquaculture in America.

I hope to see the Center expand its current program and capabilities. The program's success in the area of drug approval during the past year demonstrates the value of the regional center program to the aquaculture industry. I therefore request that the committee fund the centers to the full authorized limit of $7.5 million.

Thank you again for the opportunity to testify before you.

CHESAPEAKE BAY FOUNDATION

STATEMENT OF WILLIAM C. BAKER, PRESIDENT

The Chesapeake Bay Foundation (CBF) is a nonprofit organization dedicated to the protection and restoration of the Chesapeake Bay and its resources. CBF has offices in Annapolis, MD, Richmond, VA, and Harrisburg, PA, and operates an agricultural research and demonstration farm in Prince Georges County, MD. CBF is committed to influencing actions that will ensure protection of the Chesapeake Bay, its tributaries, and the living resources that are dependent upon these vital natural resources.

To this end, we firmly believe that research, development, and technical information efforts should be accelerated on the practical and efficacious use of biologically based methods of pest control. Critical needs exist for control of insects in wooded areas, of insects and plant diseases on food crops, and of weeds in croplands.

Specifically, we are concerned about the increased infestations by the gypsy moth in the Bay region and the efforts to control its destruction. Widespread application of chemical pesticides poses a potential threat to the Bay. As well, widespread loss of hardwood trees could be an environmental disaster. Effective pest controls are needed, but the controls need to minimize adverse impacts on the Bay. Biological methods of pest control show great promise, particularly in and near wetlands, in wilderness areas, on recreational lands, and in highly populated residential areas.

We are further concerned about the potential for agricultural and homeowner use of pesticides to contaminate our region's ground and surface waters. Alternative pest control strategies are desperately needed in order to reduce the use of pesticides and to limit their potential to pollute groundwater and the Bay. Biological controls offers some real hope that farmers and homeowners will have non-chemical choices in their battle against pests.

The time has come for the Agricultural Research Service (ARS) to accelerate its efforts to develop biological pest controls. Therefore, ARS should be directed to strengthen its efforts. A number of related activities are now underway at the Beltsville Agricultural Research Center, but there are a number of serious gaps. An annual increased appropriation of $2.4 million dollars is recommended to fill these gaps. Specifically, research should be expanded or initiated on viruses, bacteria, and pheromones for control of the gypsy moth; on biological control of foliar fungal diseases; on microbial agents for controlling insect pests of vegetables; on genetically altered insect viruses; and on microbial agents for control of weeds. Also, a national technology transfer and information center dedicated to biologically based methods of pest control, operated jointly by ARS and the University of Maryland is needed in order to facilitate the development and use of biological controls. ARS should be expected to support technology transfer and information activities through extramural projects and to strengthen the joint efforts currently underway between the University of Maryland Center for Agricultural Biotechnology and the Beltsville Agricultural Research Center.

The Chesapeake Bay Foundation appreciates having this opportunity to present our views on this important subject. We hope that you will consider favorably our input.

COALITION FOR F.D.A. RESOURCES

STATEMENT OF W. DOUGLAS CAMPBELL, EXECUTIVE DIRECTOR

Mr. Chairman and members of the Subcommittee, the Coalition for FDA Resources thanks you for the opportunity to share with you the Coalition's views on the FY 1991 appropriation for the Food and Drug Administration. The Coalition's membership spans all sectors of industry regulated by the Food and Drug Administration, and includes representatives of patients and voluntary health organizations. These groups may have their own preferences for the distribution of funds within the Food and Drug Administration, but all of them are united in making adequate funding for FDA a priority. Each of them is convinced that there are few better investments Congress could make than significantly increasing the resources FDA has to work with.

Members of the Coalition include the American Heart Association, the Animal Health Institute, the Association of Biotechnology Companies, the GPIA Animal Drug Alliance, the National Food Processors Association, the National Organization for Rare Disorders, and the National Soft Drink Association. The Pharmaceutical Manufacturers Association and Health Industry Manufacturers Association, Coalition members, are in substantial agreement with this testimony, but have not yet completed their formal review processes. If you would like, I will provide the Subcommittee a letter reflecting their formal positions as soon as they are available.

First of all, the Coalition wishes to thank the subcommittee, and the Chairman in particular, for your support last year of a very significant increase in FDA funding over and above the President's request. That request itself was grossly inadequate, and the additional funds proposed on the Senate side would have marked a landmark commitment to addressing the FDA's needs. While the amount approved in conference was substantially lower, it still represented a moderate increase and was due in large part to your advocacy for the agency. Unfortunately, much of the positive impact we had expected from last year's extra funds was eliminated by the Gramm-Rudman sequestration order and the across-the-board budget cut to fund the war on drugs. When all was said and done, the agency's personnel increased only 1.3 percent compared to the preceding year (excluding those targeted to AIDS).

This year, we hope we can do better. As others will no doubt point out to you in support of their programs, cuts in the defense budget have been proposed. This should help lower the general level of budgetary tension and lead to an atmosphere more favorable to expanding key domestic efforts, such as the FDA.

As you are aware, the Food and Drug Administration is tasked to serve as the public's guarantor that the bulk of the food supply is safe and wholesome, that all medicines and medical devices are safe and effective, and that they reach patients promptly. In the best fed society in the world, and in perhaps the best medicated, the scope of these tasks is enormous. The proper functioning of the FDA is truly an essential component of the general sense of well-being we take for granted as Americans.

However, recognition has grown within and without the agency that its resource needs are even greater than we had realized. Criticism from Congress and others during the past year has pointed out shortcomings in the agency's ability to monitor generic drugs, imported foods, and seafood. These are all resource-intensive efforts, and the resources have not been available. The problems cited are largely the result of a decade of essentially static personnel levels (see Table I) in the face of mushrooming responsibilities. The FDA's response has been to slight some duties in favor of others, to develop sampling and compliance targeting techinques to compensate for decreased monitoring capabilities, and in the end to rely on "honor systems". While some of these steps have been productive, we have come to realize that they are not enough.

FDA's plight has been widely noted in the media. For example, Dr. Samuel Thier, president of the National Academy of Sciences' Institute of Medicine, stated to the New York Times, "The Food and Drug Administration is a demoralized group, being asked to do too much with too few resources."

The Food and Drug Administration now needs a significant infusion of personnel and funding for facilities and equipment. Anything less will simply invite more food-borne sickness, more suffering as new medical products languish under administrative review, more doubts about the agency's judgments.

We turn to you, and to your colleagues in the House, to begin the rebuilding of this vital public institution. How much money, how many people will it take? The Administration, to its credit, is calling for an FY 1990 supplemental of $13.9 million to help meet the generic drug challenge, and an additional FY 1991 increase of $84 million over the FY 1990 post-sequestration budget of $587 million. Of the $84 million FY 1991 figure, $31 million is the current services factor, resulting in a real program increase of $53 million.

These amounts translate into an additional 125 f.t.e.'s, via the supplemental, and 493 f.t.e.'s for FY 1991, on the FY 1990 base of 7061 f.t.e.'s (we have subtracted personnel targeted to AIDS, for comparison purposes). Given the Administration's past budget requests, this is a refreshing commitment to addressing FDA's needs.

However, the task given FDA is larger yet, and these figures should be significantly higher. Even the President's request of 7679 f.t.e.'s, exclusive of AIDS personnel, is 400 less than the agency had ten years ago. And during the decade since then, increased responsibilities at FDA have created a need for some 2000 additional f.t.e.'s.

Nor do the 618 total new f.t.e.'s seem so generous when we realize that fully two-thirds of them are responses to pressure points which Congress has pushed during the last twelve months, specifically generic drugs and seafood monitoring. While we support increases in these areas, the remaining 200 f.t.e.'s do not go far toward meeting the personnel shortage in the rest of the agency.

For example, the agency is doubling the size of the generic drug operation. While that is appropriate, no more than a 50 f.t.e. increase is proposed for all of FDA's pre-market approval activities, on a base of 1000 f.t.e.'s. Review of new product applications at the agency still takes much too long. The only cure is additional highly trained scientific personnel. An illustrative case: one unit in a product review division at FDA has responsibility for eight pending final product applications and 150 investigational new drug filings. This group is staffed by only three professionals, and they were originally hired to be full-time researchers. In this context, morale and staff turnover problems at FDA come as no surprise. To bring down review times decisively, a 50 percent increase rather than a 50 f.t.e. increase in the product approval workforce would not be unreasonable.

As for field inspectors, the agency's own request to the Public Health Service for additional personnel for that purpose was several hundred. Unfortunately, only 125 appeared in the President's budget.

Therefore, on balance, we urge the subcommittee to provide for an additional 500 f.t.e.'s beyond the President's request and supplemental, which would require an appropriation increment of approximately $32.5 million. Conceptually, we feel that a total of 10,000 non-AIDS f.t.e.'s would be more appropriate to the FDA's mission, but we recognize that the agency could not absorb such a large staffing increase in a short period of time, and we acknowledge that the funds available to the subcommittee are not limitless.

We further feel that the President's request woefully understates the FDA's need for equipment and facility renovation. For such purposes, private industry generally devotes 3-4 percent of budget; FDA has historically spent 1 percent or less. It operates laboratories in over thirty locations throughout the nation, laboratories whose findings are vital to protecting the public's health. And yet the Administration requests only $4.8 million for this purpose.

For just three projects the real total is $8 million: an incinerator for Module I at Beltsville -- $2.2 million; replacement of water system at NCTR -- $2.4 million; and an additional $3.5 million in cost increases for Building 29B because of construction delays beyond FDA's control. The agency's FY 1991 Facilities Plan identifies $18.5 million in first priority projects alone, the result of years of inadequate maintenance budgets.

Even more alarming is the need for new laboratory equipment. Beyond the need for expanding the agency's instruments to encompass new analytical technologies, there is a severe problem with the continued reliance on equipment which is "beyond the point of proper replacement", as the current "Justification of Appropriation Estimates" states.

This document concedes "47 percent of the Field's laboratory equipment is at or beyond the point of proper replacement, which if done in one year would require over $14 million. This request includes $2.5 million to replace equipment that is most out of date, which will reduce problems due to obsolete equipment . . . ." That the world's wealthiest nation, which boasts of its long leadership in technological innovation, cannot commit $14 million to bring its primary public health protection agency's technical capacity into the 1990's is incomprehensible.

The Coalition is pleased, however, with progress toward a unified FDA campus. It notes that the General Services Administration has recently endorsed this concept, and is working with FDA to that end. Currently, the Program of Requirments for the project is being developed, and should be completed within the first half of the fiscal year. But we are concerned that no funding is requested beyond that point. We ask the Subcommittee to include $3 million to implement the next phase of the project at that time (architect's and engineering plans and studies).

Finally, the Coalition would like to note that its recommended appropriations take no account of the Administration's proposal for $157.2 million in user fees. We are opposed to such fees for a variety of reasons, among them the fact that FDA's activities are essential public services and should be fully funded through appropriated funds. Further, it is necessary to keep FDA's activities and judgments free, in fact and in perception, from any improper institutional self-interest or industry manipulation. We very much appreciate the subcommittee's past opposition to user fees in the FDA context, and we urge you to again reject the idea for FY 1991.

In conclusion, let us step back and bring some perspective to the FDA budget by considering the President's FY 1991 request for the National Aeronautics and Space Administration. In cosmological terms, FDA's budget is but a moon eclipsed by NASA's Jupiter. Just the increase ($2.83 billion or 23 percent) proposed for NASA is four times FDA's entire budget. We do not make this point to suggest that NASA's budget is unjustified. As a nation, we have been willing to fund our space program in large part because of our faith that the effort itself is noble, and that over the long term its technological byproducts will improve our lives through applications in medical devices, consumer products, electronics, and so forth. Our point is that the benefits of a $127 million investment in FDA program increases are much less a matter of faith. Very quickly they will result in faster drug and device approvals, more thorough screening of marketed products, and a rejuvenated agency.

In his budget proposal the President himself singled out three budget priorities under "Expanding the Human Frontier": space, biotechnology, and high-energy physics. While considerable sums are proposed for biotechnology research, it is ironic that virtually nothing is targeted to improving the FDA's ability to regulate biotechnology product applications as they come in. A critical shortage of FDA personnel versed in the state of the art even now threatens to undermine our national leadership in bringing these miracles to market. The situation will only get worse as both government and industry pour increasing sums into research, with no corresponding attention to the regulatory gatekeeper whose well-informed and prompt judgment means life and death not only for our biotech companies, but for our citizens.

A nation willing to finance the future through enterprises such as NASA and the National Institutes of Health should be willing to secure the present through the relatively modest FDA increases we propose. These increases amount to a total of $60 million beyond the President's budget request: $32.5 million for 500 new f.t.e.'s, $12.5 million for new laboratory equipment, $12 million for facilities repair and renovation, and $3 million for the continuation of the unified campus plan. In addition we strongly support the requested supplemental of $13.9 million for the generic drug program, as well as the increases identified by the Administration.

As we have discussed, this will not allow the agency to fully rise to its responsibilities, but in the context of what can be done in a single year, it is a good start.

We thank you, Mr. Chairman, and members of the Subcommittee, for your consideration of our views. We hope to work with you to achieve our common goals as the appropriations process moves along.

F.D.A. PERSONNEL STATISTICS: FY 1980-1991

FY '80	8089	f.t.e.'s
FY '81	7799	
FY '82	7316	
FY '83	7292	
FY '84	7259	
FY '85	7191	
FY '86	7001	
FY '87	6833	(not including 127 targeted to AIDS)
FY '88	6927	(not including 280 target to AIDS)
FY '89	6970	(not including est. 380 targeted to AIDS)
FY '90	7061	(not including 506 targeted to AIDS)
FY '91 (per request)	7679	(not including 580 targeted to AIDS)

STATEMENT OF THE COALITION ON FEDERAL AGRICULTURAL RESEARCH MISSIONS

(COFARM) is a broadly based coalition united by a commitment to sustained investment in the nation's capacity to produce quality food and fiber in an economically competitive manner which conserves resources and preserves the environment. The coalition's aim is to ensure that the scientific and technological data base which is necessary to achieve these aims is provided for in a timely manner which ensures competitiveness with producers from abroad. Members include scientific and professional societies with over 100,000 members actively engaged in research. Many of these members are engaged and/or trained in agricultural research.

American Diary Science Association
American Institute for Biological Sciences
American Meat Science Association
American Society for Horticultural Science
American Society for Microbiology
American Society of Agronomy
American Society of Animal Science
American Society of Plant Physiologists
Crop Science Society of America
Federation of American Societies of Food Animal Sciences
Institute of Food Technology
Poultry Science Association
Soil Science Society of America

The Coalition On Federal Agricultural Research Missions (COFARM) is a broadly based coalition united by a commitment to sustained investment in the nation's capacity to produce quality food and fiber in an economically competitive manner which conserves resources and preserves the environment. The coalition's aim is to ensure that the scientific and technological data base which is necessary to achieve these aims is provided for in a timely manner which ensures competitiveness with producers from abroad. Members include scientific and professional societies whose 128,000 members are actively engaged in research. Many of these members are engaged and/or trained in agricultural research.

GOALS

- Strengthen the Agricultural, Food and Environmental System to meet the challenges that confront U.S. agriculture on a global scale.
- Provide the fundamental research needed to overcome technical barriers to achieve and speed up the momentum for using the latest advances in science to benefit the U. S. agricultural system.

AIMS

- Ensure strong economic performance from agriculture.
- Provide the technology base that is necessary for the development of new products, new processes and value-added products derived from agricultural materials.
- Improve and design food products which are highly nutritious and of high consumer quality to provide enhance the well-being of our citizens.
- Ensure safety of foods.
- Understand and develop macro-economic policies which permit U.S. agriculture to remain competitive in world markets.
- Provide for the human resources and infrastructure for agricultural research.

- Sustain and enhance the natural resources by developing new scientific and management techniques for agricultural production.
- Advance the fundamental knowledge of plants and animal systems to provide the technological base to supply broad program areas

ACTION

COFARM strongly endorses these aims and urges Congress to implement the recommendation of the National Research Council's, Board of Agriculture, "Investing in Research: A Proposal to Strengthen the Agricultural, Food and Environmental System" by appropriating $500 million in new monies for FY 1991 for the USDA's Competitive Research Grant Program.

THE RETURN ON INVESTMENT FROM AGRICULTURAL RESEARCH

The nation's investment in agriculture has produced a system of agriculture that provides cheap, wholesome food and fiber for its citizens. U. S. citizens work fewer hours to pay for food than anywhere else in the world. There are no lines in the U.S. for agricultural commodities. The return on prior investment in research in agriculture continues every hour of every day. It has produced the Green Revolution.

New technological developments in the Basic Biological Sciences hold the promise for advances in agriculture that will equal or may well surpass those generated by the Green Revolution.

A few examples:

Transgenic plants have been produced in which the genes for nontoxic biological pesticides from bacteria have been incorporated into target plants and appear to be effective.

Swine which have been transfected with genes for specific proteins grow faster and have a lower back fat content.

Transgenic fish have been produced that grow at a faster rate.

Cotton fibers have been produced in the laboratory by plant cells in tissue culture.

However, despite these significant achievements in our fundamental and practical knowledge of plant and animal systems, there are many technical barriers that must be overcome to achieve and speed up the momentum for using these latest advances in science.

A few examples of the technical barriers that require fundamental research are:

Development of alternative vector systems for incorporating desired genes into plants.

Identification of tissue specific promoters for plant cells.

Development of marketing strategies for locally derived, small businesses that develop value-added products.

Identification and development of pollution prevention practices for agriculture.

Understanding of how animals partition nutrients to produce leaner or higher quality products.

THE ERODING LEAD

The technology lead that the U.S. has in agriculture is eroding. Many countries have implemented agricultural practices developed in the U.S. and have become self-sustaining in their food production. Exports are declining. The U.S. has become a net importer of processed foods. New discoveries in the biological sciences promise significant improvements in the production, quality and safety of food products. Many countries, including some developed and most developing nations, have recognized and invested in that potential. They are gaining the capacity for expanded production and lower per unit cost for agricultural products.

The consumer in the U.S. is seriously questioning current agricultural practices that involve the use of pesticides and affect water quality. New regulations in these areas may negatively influence yield and unit cost of food and fiber production.

The international and national signals must not be ignored. New technology must be developed if the U.S. is to remain the leader in agriculture. This can only be ensured by an enhanced investment in fundamental food and agricultural research.

PROFILE OF AGRICULTURAL RESEARCH

A recent publication by the National Science Foundation "Profiles-Agricultural Sciences: Human Resources in Funding" (NSF89-319), summarizes the current status of trained agriculture scientists. Twenty-five (25%) percent of the agricultural scientists in this country are over 50 years of age as compared to twenty (20%) for all other life sciences. Twelve percent (12%) of the agricultural scientists are between the ages of 40-49 compared to twenty-four (24%) of all other sciences. Agricultural science has a much higher age profile and many will retire soon. These statistics indicate there will be a shortage of agricultural scientists for the positions in federal, academic and private research laboratories. They also indicate that a high proportion of present day agricultural scientists have not been trained in modern technologies. This situation must be rectified. The scientific equipment and infrastructure necessary for performing research in agricultural sciences also needs to be modernized.

Although agriculture accounts for assets in excess of $1.039 trillion per year in exports, it comprises only 3.22% of the total federal research budget in science.

It was estimated that in 1988, $679.8 million was expended on research by the USDA. Only $39.9 million of that total or 5.9% was expended on fundamental research via the competitive grant program. Ninety-eight percent (98%) of all fundamental research in agriculture was funded by the USDA.

When the Competitive Research Grants Office (CRGO) was funded in 1978, the recommendation was for $40 million per year. It was legislatively capped at $70 million per year. If the 1978 $40 million recommended level is adjusted using the BPRDI, then the level of funding for FY 1991 should be over $81 million. In the twelve year history of the program, it has never been funded at the level recommended in 1978 (Figure 1). Lack of adequate funding for fundamental research in agriculture is the prime reason that the United States's lead in agriculture is eroding. CRGO has never been adequately funded (Figure 2). Each year's requests far exceed the dollar amount available. The National Research Council has published numerous studies that detail the the lack of knowledge in basic plant and animal systems. This lack of knowledge impedes advances in agriculture.

Agricultural research and development is conducted by the Agriculture Research Service (ARS), universities, the State Agriculture Stations, U.S. Forest Service, Economic Research Service and private industry. In 1986, federal funding comprised about 44% of the funding and private industry about 55%. Total funding was $4,432.2 million. Only a small proportion of that total was on fundamental research on agriculture. It is probable that this total is less than 5% of the total amount spent on R & D. The level of funding for fundamental research is the weak link in the agricultural system. The amount expended on agricultural R & D is far below the level expended for research by either HHS, NSF, DOE, DOD or NASA (See Table 1). The needs and challenges of agriculture research cannot be met with present levels of funding for agricultural research. An investment in the future for agriculture to strengthen the agricultural food and environmental system must be made.

MANAGEMENT OF THE NRC INITIATIVE WITHIN USDA

Since 1978, and despite low budgets, the Competitive Research Grant Office (CRGO) has performed in exemplary fashion. It has proven that it manages the competitive grants for agriculture in a fair and unbiased manner. It has also been shown in all facets of federally funded fundamental research, that competitive grants have been shown to be the vehicle that provides research ideas and the mechanism to produce highest return for money expended. COFARM is in agreement with the National Academy of Sciences recommendation that an INITIATIVE in fundamental research in agriculture should reside in CRGO (see page 87 of the NRC report) and that CRGO should be elevated as the fourth major Science and Education Agency within the USDA when the NRC Initiative is funded.

Administration of CRGO should be on an equal footing with the administration of the Agricultural Research Service (ARS), the Cooperative State Research Service (CSRS), and the Extension Service (ES). We believe that a fourth agency is an absolute requirement if the integrity of the Initiative proposed by the NRC is to be maintained. The administrator of CRGO must have the freedom to administer the content of the program. The priorities must be made utilizing the input from the entire scientific community if the opportunities, needs and challenges of agriculture are to be met. This can only be accomplished if the content is to be reflective of national priorities and is not subjugated to the missions of other agencies within USDA's Office of Science and Education.

However, it is absolutely necessary that the initiative within CRGO be coordinated with the needs of other agencies within USDA. It should be possible to accomplish these ends since CRGO has the prime (but not the sole) responsibility for fundamental agricultural research: CRS would be responsible for satisfying local and state needs; ARS for development of agricultural needs and specific target mission; and ES and CSRS for technology transfer. It should also be possible to coordinate the program and make certain that ARS, CSRS, and ES bench scientists serve on appropriate program panels as is currently practiced. Additionally, ARS and ES scientists should be permitted to compete for CRGO research grants as is currently practiced.

THE PROMISE OF FUTURE INVESTMENT

- A better understanding of plants and animals which will provide the basis for increased competitiveness of US agriculture.
- High quality nutritious and safe foods.
- An adequate food supply to meet markets and expanding population needs.
- Newer, faster and more accurate techniques to assess the microbial, chemical and nutritional quality of foods.
- Funding the Initiative at the recommended level would provide for the training of agricultural scientists.
- Conservation of soil, water, and forest for future generations.
- Sound basis for marketing and trade policy.

THE USDA FY 1991 BUDGET REQUEST FOR THE NRC INITIATIVE

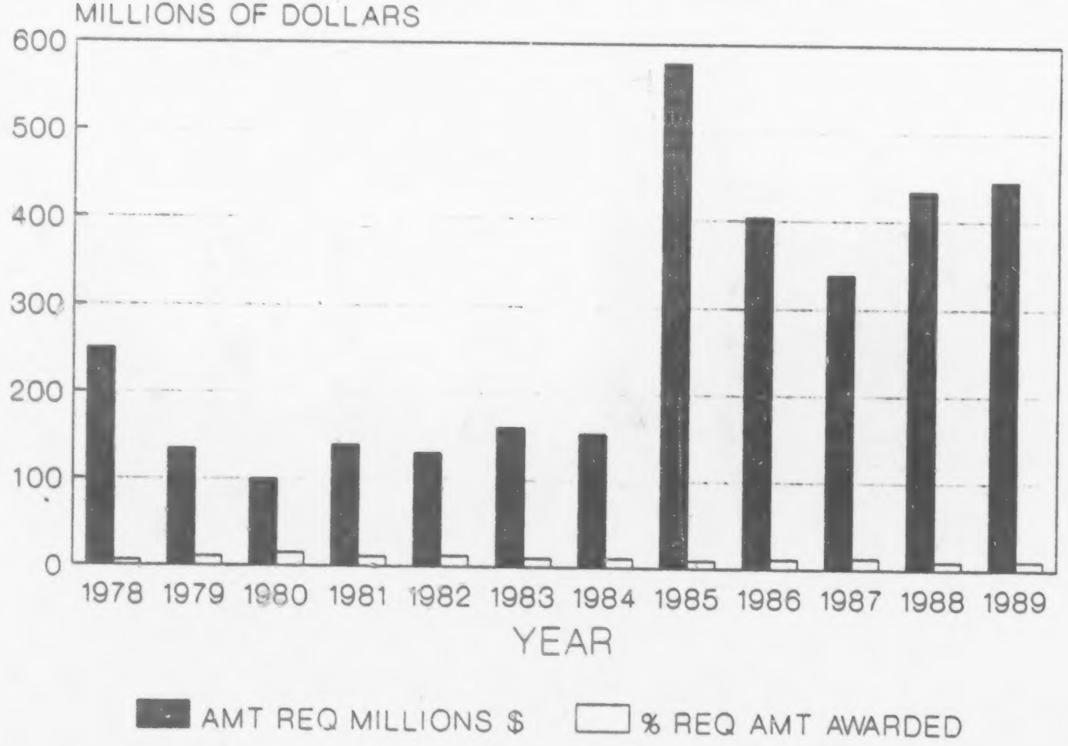
The COFARM urges Congress to invest in strengthening the Agricultural, Food and Environmental System to meet the challenges that confront US agriculture on a global scale.

We recommend that the full $500 million in new monies recommended by the NRC be appropriated for FY 1991. We do not believe that the $100 million suggested by the Administration is adequate. The Adminstration's request assumes the burden in all of the six research areas that the Board of Agriculture recommended without any real increase in budget. We have calculated that if the current competitive grants program was funded at the same level as NSF, it would require approximately $90 million.

Additionally, the Administration has earmarked $15 million of the $100 million dollars that they have proposed for FY 1991 for research on a plant genome program. This is a new program suggested in the Administration's budget which was not included in the NRC initiate. If indeed the plant genome project is a high administrative priority, an additional $15 million should be appropriated for that project.

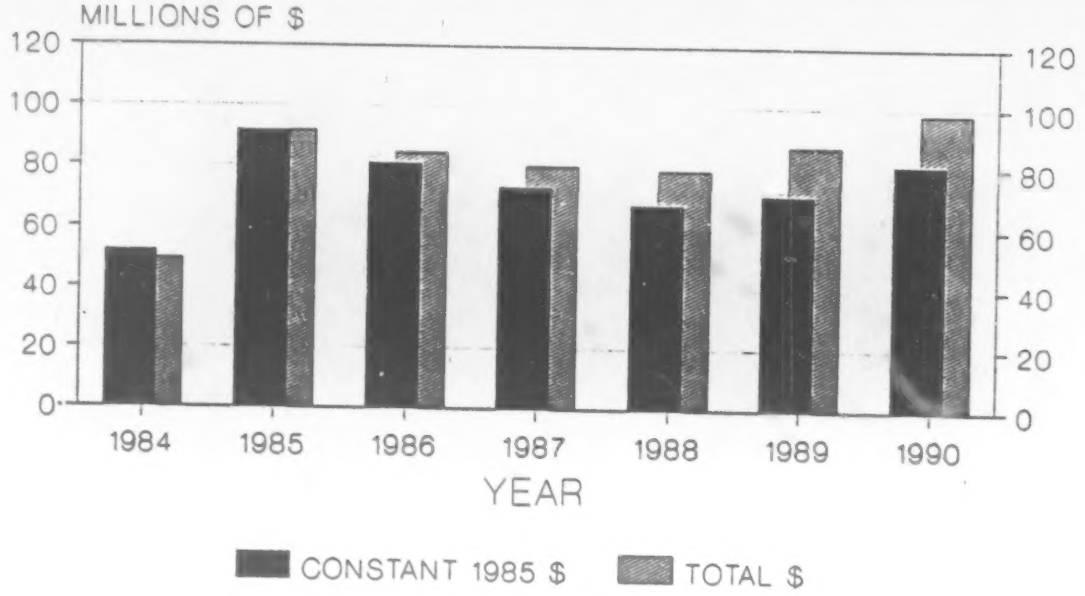
We urge the Congress to not only embrace the goals of the NRC Initiative, but to fund it at the level that is necessary, i.e. $500 million in new monies.

FUNDING PRACTICES IN CRGO (FY 1978-1989)



SOURCE USDA

HISTORY Of CSRS FUNDING
TOTAL RESEARCH GRANTS (1984-1990)



ADJUSTED WITH NIH BRDPI
INCLUDES CRGO, SPECIAL, FORESTRY &
ANIMAL,TRAINING GRANTS

TABLE 1

Comparison of funding of Biological Research in the U.S. Department of Agriculture, National Science Foundation and National Insititutes of Health

(FY 1989)

	USDA[a]	NSF[b]	NIH[c]
Number of Proposals	1,408	5,224	19,534
Number of Grants Funded	324	2,246	5,382
Percent (%) of Proposals Resulting in Grants	23.0%	43.0%	27.6%
Amount Requested (Dollars in Millions)	$445	$1,648	$2,750[d]
Amount Awarded (Dollars in Millions)	$44.5	$166	$982.4[e]
Percent (%) of Requested Amount Awarded	10.0%	10.0%	NA
Average Amount of Award (Dollars in Thousands/Year)	$59.9	$74.0	$195

[a] USDA - Data for competetive grants but does not include training grant

[b] NSF - Data from the cellular, molecular and biotic systems and resources biosciences division, directorate for biological, behavioral and social sciences, NSF

[c] NIH - Data for total NIH

[d] Direct Costs

[e] Direct + Indirect Costs

Source: USDA, NSF and NIH

COLORADO RIVER BASIN SALINITY CONTROL FORUM

STATEMENT OF JACK A. BARNETT, EXECUTIVE DIRECTOR

Supporting funds requested by the President's 1991 budget for the Colorado River Salinity Control Program.

Including:

1. $9,000,000 for cost-sharing onfarm salinity control
2. $5,333,000 for SCS for technical assistance, monitoring, and evaluation
3. $450,000 for information and education

In fiscal year 1990 the Congress provided $10.42 million for work associated with the Department of Agriculture Colorado River Salinity Control Program. As this most cost-effective water quality program is in its early years of implementation, we believe that the approximate $4.4 million dollar increase requested by the President is justified.

There is strong interest and active participation by farmers in the five areas where the program has been initiated. Even a stronger commitment by farmers to implement salinity control measures in the future is demonstrated by the large number of pending applications for participation. Irrigators in the Uinta Basin area of Utah, the Big Sandy area of Wyoming, and the Grand Valley and Lower Gunnison areas of Colorado have volunteered to pay their requested share of the cost for this water quality control program, with benefits being felt many hundreds of miles downstream in the United States and Mexico. In addition, the Department of Agriculture has recently initiated implementation in the McElmo Creek area of Colorado and is proceeding with actions which will implement the Colorado River Salinity Control Program in the Moapa Valley area of Nevada.

RECENT BACKGROUND
DETAILED FUND ALLOCATION

The onfarm Salinity Control Program was initiated in the Grand Valley of Colorado and the Uinta Basin area of Utah with the use of ACP funds. With Colorado River salinity control funds being currently appropriated, the program is being fully implemented in these two geographic areas. Two years ago the program was started in the Big Sandy area of Wyoming and the Lower Gunnison area of Colorado. In all four areas, many contracts have been signed and many more contracts are being prepared. In the newly initiated McElmo Creek area, contracts are being prepared. By the end of the current fiscal year, it is anticipated that all of the FY 90 funds will be designated for contracts and technical assistance and totally committed, in the very near future, with Colorado River Basin farmers to apply salinity reduction practices.

An additional area has been identified in Colorado and Nevada as having very cost-effective salinity control onfarm program potential and is within the overall USDA selected plan.

It is planned that the next onfarm salinity control efforts will begin in the Moapa Valley area of Nevada. Under study are the Price-San Rafael area of Utah and the Hammond area in northern New Mexico. These much-needed water quality programs can move ahead with adequate Federal funding as the Basin states and the local farmers are in a position to financially participate in this cooperative program. The Basin states and the local farmers are ready to proceed with this partnership and pay at least 51 percent of the cost of this construction program.

JUSTIFICATION

The water of the Colorado River system serves some 18 million people and irrigates approximately 1.6 million acres of land in parts of the seven Colorado River Basin states. The River also provides domestic and irrigation water to Mexico. Salinity has long been recognized as one of the major problems in the River. Water users in the lower reaches of the River system have suffered significant adverse impacts due to the River's salinity. These impacts have been estimated to have reached over $300 million a year in the United States. Without the salinity control measures, the salinity of the River is projected to increase beyond the water quality numeric criteria at Imperial Dam, with continued development of the compact-apportioned waters. The economic damages suffered by the water users could double by the turn of the century.

The Basin states' concern with the River's increasing salinity led them to create the Colorado River Basin Salinity Control Forum in 1973. The Forum, whose members are appointed by the governors of the respective states, developed a salinity control policy that stated that while the Basin states continue to develop their compact- apportioned waters, salinity concentrations must be maintained at or below those levels found in the lower River in 1972. This salinity control objective is the Basin states' adopted-EPA approved water quality standard for the Colorado River. The standard was adopted pursuant to the Clean Water Act. The policy forms the basis for the cooperative federal/state, Basin-wide salinity control plan. The Forum has a continuing responsibility to see that a salinity control plan is implemented to meet the policy objectives.

After discussions involving the Federal Government, the Republic of Mexico, and the seven Colorado River Basin states, the Congress enacted in 1974 the Forum-sponsored Colorado River Basin Salinity Control Act (P.L. 93-320). Title I of the Act established a program to reduce the salt concentrations below Imperial Dam (the last diversion point on the Colorado River in the United States), so that the United States could honor its 1973 agreement on Colorado River salinity with Mexico. Title I was identified by Congress as a federal commitment. The Act established a program, Title II, which allowed the States and the Federal Government to work together to prevent salinity increases in the Colorado River above Imperial Dam, benefitting users in the United States as well as Mexico. The 1974 Act also created a Colorado River Basin Salinity Control Advisory Council, composed of gubernatorial representatives of the Basin states to advise the Secretaries of the Interior and Agriculture and the Administrator of the Environmental Protection Agency as to needed annual adjustments to the salinity control effort.

In 1984 the Congress enacted much-needed amendments to the 1974 Act. In response to issues first raised by the Forum, the amendments resulted in Public Law 98-569, which authorized additional Department of the Interior and Department of Agriculture activities needed to meet the objectives of the 1974 Act. In recognition of the proven cost-effectiveness of Agriculture's onfarm management activities in controlling river salinity in the Basin, a separate Colorado River Basin onfarm management salinity control program was authorized for the Department of Agriculture.

Consistent with the newly enacted amendments and in working with Agriculture, the Advisory Council made specific recommendations in its 1989 Annual Report relative to FY 91 funding for the salinity control efforts. The funding level recommended by the Council to maintain salinity concentrations at or below the adopted salinity standards is greater than the Forum is now requesting. The Forum believes that the President's request, given today's budget constraints, is reasonable and appropriate.

CONSORTIUM OF SOCIAL SCIENCE ASSOCIATIONS

STATEMENT OF GLENN L. NELSON

Mr. Chairman and Members of the Subcommittee:

My name is Glenn Nelson. I am a Professor of Agricultural and Applied Economics at the University of Minnesota. My experience includes governmental work as a Senior Staff Economist on the President's Council of Economic Advisers and as State Economist of Minnesota. My concern for rural people is personal as well as professional. My brother and many other relatives are farmers in western Minnesota.

I am testifying today on behalf of the Consortium of Social Science Associations (COSSA) which represents 185,000 American scientists across the wide spectrum of social and behavioral science disciplines. A list of COSSA Members, Affiliates, and Contributors is attached.

We strongly support funding of $150 million for all of the six research areas of the National Initiative for Research on Agriculture, Food and the Environment in the budget of the Cooperative State Research Service. This level of funding has also been endorsed by the Experiment Station Committee on Organization and Policy (ESCOP) and by the National Association of State Universities and Land Grant Colleges (NASULGC). We also strongly support the recommendations of ESCOP and NASULGC that the portion of the National Research Initiative devoted to "Markets, Trade, and Rural Revitalization" receive $10 million consisting of $5 million for Markets and Trade and $5 million for Rural Revitalization.

The bases for our recommendation can be summarized under three points:

- The opportunities and problems of rural people are national issues. States and localities acting alone will not adequately support research leading to greater industrial competitiveness, more nutritious foods, more productive individuals, more nurturing families, and better functioning communities. A national research initiative is needed if significant progress is to be made.

- The exploitation of opportunities and the solution of problems depends on mobilizing the best talent available. Some of the talent must be focused on specific needs of society. Some of the talent must concentrate on improving the base of scientific understanding that will lead to many, diverse payoffs of an unforeseen nature in the future. The National Research Initiative establishes a procedure for better mobilizing the best talent to broaden the options of rural businesses, communities, and families.

- The opportunities and problems of rural people have a multifaceted character that demands a comparable research strategy. For example, the future success of American businesses, including rural businesses, depends on the education and experience of tomorrow's work force taking place in today's families as well as on new technologies for producing products. A research program must include study of the managerial, organizational, family, and community features of opportunities and problems if the research is to produce findings useful to rural people as well as to scientists in narrow specialties.

The remainder of our testimony further elaborates these three points.

The Opportunities and Problems of Rural People Are National Issues

The concerns of rural people are important to the nation because rural (or nonmetropolitan) people and places make up a considerable proportion of our nation. To cite a few examples, nearly a quarter of the U.S. population resides in rural communities. A majority of the nation's natural resource base and associated employment--including agriculture, forestry, mining and fishing--is located in rural areas. Rural areas contain approximately three-fourths of local governmental units in the U.S. Nearly one-third of poor people live in rural places. The future prosperity and general well-being of the nation depend to a significant extent on the prospects of rural people and their communities.

In addition, many of the opportunities and problems of rural people are appropriately a national concern because the issues affect rural people, businesses, and communities throughout the nation. Because the pay-off from progress on these issues is broadly distributed over the nation, no single state or locality has sufficient incentive to mount a full scale attack on these issues. An adequate response to the opportunity or problem depends critically on an initiative at the national level. The following four examples are only a small sample of those that could be cited.

- The deregulation of transportation and communication is having major impacts on the well-being of rural residents and the viability of rural communities throughout the nation. We continue to lack adequate understanding of what has happened and what is likely to happen in the future. No one state can, or should, pay the entire cost of the needed studies whose benefits would accrue to residents of all states. An adequate response will depend on federal research funding.

- American business, including farming and agribusiness, has performed well in part because of continuously improving management techniques developed in research programs and refined in academic-business interactions. The Land Grant system has played an important role in this process and especially for rural businesses. The opportunities of new technologies and the pressures of international competition dictate continued improvement of management techniques if rural businesses are to remain competitive. These new techniques will have application throughout the U.S.

- The competitiveness of American enterprise and the quality of our domestic institutions is heavily dependent on the continued development of high self-esteem and of excellent leadership among our citizenry. Our efforts to enhance these qualities among historically disadvantaged populations are especially important if we are to move closer to our national ideals of a pluralistic society with equal opportunity for all regardless of race, sex or parental income. Results from research on leadership and self-esteem spread quickly throughout the nation's schools and community education programs. The nation will shortchange itself if it expects states and localities to pick up the tab on a national concern.

- Agriculture, forestry, mining, and manufacturing are important rural sectors whose fortunes depend critically on the ability to compete for export markets and to meet competition from foreign imports. The analysis of world markets, including the impact of foreign agricultural and trade policies on U.S. industrial performance and prospects, is critical to U.S. competitiveness. These analyses have broad national application and will not be supported adequately by any single state.

The National Research Initiative that we support will focus research on these issues of broad national significance.

The Research Strategy Should Mobilize the Best Talent

The importance of the opportunities and problems facing rural residents implies that we should put in place a research strategy that recruits the best talent to attack the issues. The talent should be distributed between applied problems of current national significance and scientific problems of critical importance to future insights. The research strategy should encourage the best talent among the young to enter careers focused on the exciting, important issues of rural people.

The required expertise is spread among many people in diverse institutions and with diverse disciplinary backgrounds. Many, but not all, of these experts are in the Land Grant system supported in part with formula funding from the Cooperative State Research Service. The following are important examples of high priority research areas where participation of a broad range of researchers would be desirable.

- Today's youth, rural and urban, live in a difficult world with increased rates of marital divorce and separation, easier availability of drugs, greater pressures for premarital sex, and numerous other pressures. Research on better ways for our families, schools, and communities to address the problems of youth should be a high priority. The needed expertise is spread across the full spectrum of social and behavioral scientists and is not limited to those in Land Grant institutions.
- Regional economies within the nation have fared quite differently from the national average in the 1970s and 1980s. International trade pressures, accentuated by the federal policy decision to let the dollar freely trade, and rapid technological advance have caused the fortunes of particular sectors and regions to rise and fall with greater volatility than the overall economy. Research on the impacts of macroeconomic policies such as monetary, fiscal, and trade policies on rural communities of diverse types is needed in order to inform private decision makers as well as to inform policy makers. The relevant experts are not all within the Land Grant system.

The research strategy should allow for a mix of targeting the best talent on well-defined national needs and on more basic scientific knowledge. The following are examples of well-defined problems of rural people that might suitably be targeted for special emphasis:

- Appropriate institutions and financing mechanisms for early childhood education in rural areas, with special emphasis on children in poverty.
- Appropriate institutions, technologies, and financing mechanisms to deliver high quality doctor and hospital services to rural people.
- Appropriate institutions to enable the rural elderly who desire to remain in rural communities to do so with opportunities to serve the community and with access to important private and public services.

The following are examples of important areas where better scientific knowledge would have application to a wide range of concerns.

- Better knowledge of individual experiences, community characteristics, and public policies that foster creative entrepreneurial activities.
- More accurate demographic methods to project the size, regional distribution, and human capital endowment of the rural work force.
- Improved explanations, encompassing investments in people and institutions, of why some rural regions prosper while others decline.

The research strategy should recognize that the long-term future of rural America depends on producing the next generation of experts as well as on effectively utilizing current expertise. Investments are needed in people in the form of fellowships for research conducted by outstanding graduate students and postdoctoral fellows. Investments are needed in institutions that could potentially contribute to important research on rural problems but that are constrained by inadequate resources. The national interest in making the most of all of our resources, as well as equity, dictates that we should make a concerted effort to ensure that the potential talents of minorities and women are realized rather than left undeveloped.

The National Research Initiative that we support sets in place the institutions and funding to mobilize the best talent. The Initiative will reach out to the full array of talent from the entire U.S. science and technology sector. The Initiative will provide for mission-linked research focused on applied problems of national significance and for fundamental research focused on enhancing the nation's capacity for innovation. The National Research Initiative will help produce tomorrow's experts through research-strengthening grants to institutions and individuals.

The Research Strategy Should Be Multifaceted

The opportunities and problems of rural people have a multifaceted character that demands a comparable research strategy. The National Research Initiative recognizes this by proposing *simultaneous* support of six interrelated research areas: natural resources and the environment; nutrition, food quality, and health; new products, processes, and value-added; markets, trade, and rural revitalization; animal systems; and plant systems. The National Research Initiative further responds to the interrelated nature of the problems by proposing that a major portion of the research funds be devoted to fundamental multidisciplinary grants and to mission-linked multidisciplinary team grants.

We strongly endorse the need for funding all of the six research areas. We also strongly endorse the need for more multidisciplinary research. In particular, the National Research Initiative must include study of the managerial, organizational, family, and community features of opportunities and problems if the research is to produce findings useful to rural people as well as to scientists in narrow specialties.

The following examples illustrate the important research which must draw simultaneously from several disciplines in order to address adequately the concerns of rural people.

- The protection and enhancement of the natural environment while promoting economic growth is a high priority in rural areas as well as elsewhere. Creative solutions will entail a blend of new technology, economic incentives, organizational reforms, and citizen education. The future prosperity, and in some cases viability, of many rural communities hinges on our ability to attack and solve this problem with input from social scientists in all fields.

- Physical infrastructure is a prerequisite for economic growth. Much of the nation's existing physical infrastructure, rural and urban, has fallen into disrepair. In addition, the exploitation of new technologies such as lasers, microchips, and satellites depends on investments in new forms of infrastructure. Society does not have sufficient resources to put every technology into every business and home. The design of the best alternatives for rural areas is likely to come from teams of researchers that can consider simultaneously the capabilities of technological devices, the organizations to manage provision and access, the incentives consistent with efficient provision and use, and the opportunities for new work and home arrangements.

- Human capital is widely recognized as a critical element in U.S. competitive strategy in international economic affairs. The creation and retention of high quality human capital is also critical to the competitiveness of rural economies. Most human capital is formed in the family, not in schools, universities, or businesses. But increasing disorder and instability in the American family threaten to reduce its capacity for producing healthy, well-educated, productive young people. The needed research involves experts in the family, in youth, in public services, in communities, and in business in order to solve this problem at the very heart of the future well-being of the nation in general and of rural areas in particular.

In conclusion, we urge your support for all of the six research areas in the National Research Initiative, including $10 million for "Markets, Trade, and Rural Revitalization." Thank you for the opportunity to present our views.

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COUNCIL FOR AGRICULTURAL RESEARCH, EXTENSION AND TEACHING

STATEMENT OF MARY GRIM, CHAIR

Mr. Chairman and Members of the Subcommittee, I am pleased to appear before you today and offer testimony in support of the agricultural research and education programs of the land-grant universities which are funded through the USDA budget. My name is Mary Grim. I am a resident of Adams County, Pennsylvania, and I am here today as chair of the Council for Agricultural Research, Extension and Teaching, more commonly known as CARET. CARET is a national grassroots organization of volunteer leaders who are concerned with the agricultural research and education programs conducted by the land-grant universities. As volunteers, we work closely with the deans of agriculture at each land-grant school under the umbrella organization of the National Association of State Universities and Land-Grant Colleges (NASULGC). CARET serves as supporter of, advisor to and friendly critic of the land-grant system.

The land-grant system seeks to improve the quality of life for all citizens of our country. As a user of this system I can assure you that the benefits of the agricultural research and education programs conducted by these institutions do actually reach the American public. The research conducted by these schools is directly related to the needs established at the grassroots level. The extension arm of the land-grant system continues to effectively transfer new technology and information developed by these institutions. In simple but effective language Extension takes this knowledge to the users in terms they can understand and use. The land-grant universities provide key leadership to the American agricultural community as it confronts on-going problems such as pest management, food safety, water quality, drought resistance of plants, and the health and welfare of animals. It also provides an abundance of other unbiased information to the general public which assists all of us to make better economical, environmental, family and community decisions.

Today, I am here to offer support for the funding recommendations of the NASULGC Division of Agriculture FY91 Budget Committee which represents all facets of the land-grant community. I have attached several tables for your consideration which detail these funding recommendations. CARET strongly supports increased funding for the base programs identified as Hatch, Smith-Lever, Evans-Allen, McIntire-Stennis, Animal Health, 1890 Colleges and Tuskegee University, and Morrill-Nelson. These funding mechanisms are critical for this system to survive. They serve as the backbone for all agricultural research and education programs being done by these institutions. As this subcommittee knows, an expanded technological base does not occur overnight. It takes years of detailed experimentation. In many cases the life of a research grant does not provide enough time to bring research projects to full conclusion. The base program dollars provide a continuous source of funding which is so vital to an on-going research effort. We cannot afford to turn the funding faucet on and off if we expect the system to provide the long-range results this country needs.

I would like to highlight other areas to which the land-grant community is giving particular attention. The on-going development of a nucleus of well-trained scientists and professionals in the agricultural arena continues to concern the CARET organization. The Competitive Graduate Training Fellowships Program enables our institutions to produce academically outstanding students who will become this nation's scientists, technicians, educators and entrepreneurs. These fellowships are available throughout the entire land-grant system. It is also important to add that it is estimated that by the year 2000, 85 percent of persons entering the workplace will be members of minority groups and women. There is a great need, therefore, to train more minority scientists and professionals. The 1890 land-grant institutions and Tuskegee University are major resources of this needed human capital. Consequently, CARET supports any increased funding for these higher education tools.

In addition to areas outlined in the attached tables, the extension component of the land-grant community is seeking funding of $10 million for a

National Initiative on Youth at Risk which addresses problems confronting many of our modern youth; to name a few: poverty, drug and alcohol use, teen pregnancy, and welfare dependence. CARET recognizes that Cooperative Extension agents live and work in the community. They are in an excellent position to recognize problems and can quickly respond to these problems with programs which address a community's needs. These programs result in helping our youth gain the self-esteem and self-confidence which in turn help them become productive and contributing members of a community.

A good clean water supply is also critical to the health, welfare and progress of this nation. CARET recognizes that funds have been appropriated by Congress in past years to address these needs. The monies that have been spent by states across this nation to address their diverse problems have greatly helped to turn around disastrous situations. For example, my state's land-grant university, Pennsylvania State University, works through its research specialists and Cooperative Extension agents to teach farmers and homeowners in the Susquehanna River Basin ways to protect the water supply feeding into the Chesapeake Bay. This multi-state effort, which includes Maryland and Virginia, seeks to eliminate by the year 2000 40 percent of the pollutants entering the Bay. The citizens of these three states are being taught how to reduce the usage of nitrogen and phosphorous in their agricultural, residential, recreational and industrial areas. We urge you to continue to fund this critical research and education effort.

Recently a report entitled "Investing in Research" called for an infusion of new dollars into agricultural research in order to "strengthen the agricultural, food, and environmental system." The National Academy of Sciences accurately points out that "in the agricultural system, as with other segments of U.S. industry, the problems of the twenty-first century intensify more quickly than ever before, and opportunities must be seized immediately before their peak of potential benefit has passed." We at the local level have long recognized the need for additional dollars to be spent on agricultural research and education programs. It is imperative that the United States remain a world agricultural leader. We as a nation can remain strong and competitive in the world market if we have the tools and information readily available to meet changing demands. In order to do this we must intensify our efforts immediately. Through the investment of new monies in agricultural research and education the United States will be investing in its future. Issues such as nutrition, economics and international trade, production efficiency, natural resources conservation, control of pollutants and others will be resolved by increased knowledge, improved tools and technologies, and skilled persons to teach the public. CARET supports any infusion of new monies into agricultural research and education programs.

I will not take the time to completely review all the successes and needs of the land-grant system. This Subcommittee is well-acquainted with the benefits of the programs conducted through the land-grant system. CARET would offer, however, to respond to any queries this subcommittee may have about these successes and needs.

May I conclude by simply saying, as a taxpayer, that Congress is getting a bargain for every dollar it puts into agricultural research and education programs of our land-grant schools. An impressive example of this is that in the state of Mississippi there is a documented $41 return on every federal dollar invested into its land-grant program. Likewise the states of North Dakota, Arkansas, Pennsylvania, and all others enjoy a similar dollar return on these investments.

I would like to thank this subcommittee for the support that you have offered in the past and for the fine leadership you give to our land-grant system. With increasing urban populations our nation is moving further away from an understanding of its agricultural base. Our future challenge will be to increase the understanding of food and fiber production among the general public. The land-grant system remains committed to delivering this message to the citizens of the United States.

Again, Mr. Chairman, thank you for the opportunity to appear before you today. CARET looks forward to continuing its work with this subcommittee in furthering American agriculture.

TABLE I: SUMMARY OF FUNDING RECOMMENDATIONS FOR RESEARCH, EXTENSION AND HIGHER EDUCATION
(Thousands of dollars)

	FY 90 Appropriations GRH	FY 91 Executive Request	FY 91 NASULGC Recommendations
Base Programs			
Research	202,756	197,689	214,921
Extension	265,054	270,627	282,708
Higher Education	2,810	0	2,810
Special Programs			
Research	123,554	132,204	224,441**
Extension	104,126	75,049	133,740
Higher Education	11,111	17,000	21,000
TOTAL	709,411	692,569	879,620

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* GRH refers to the Gramm-Rudman-Hollings balanced-budget law.

** Includes $107.5 million of new funding for the National Research Initiative (NRI) for Agriculture, Food and Environment.

TABLE II: RESEARCH FUNDS
(Thousands of dollars)

	FY 90 Appropriations GRH	FY 91 Executive Request	FY 91 NASULGC Recommendations
BASE PROGRAMS			
Hatch Act Base Funds	155,058	158,545	164,361
McIntire-Stennis Act	17,279	12,975	18,316
Evans-Allen Program (1890)	25,012	26,169	26,513
Animal Health (Section 1433)	5,407	0	5,731
TOTAL BASE PROGRAMS, RESEARCH	202,756	197,689	214,921

TABLE II: RESEARCH FUNDS (continued)
(Thousands of dollars)

	FY 90 Appropriations GRH	FY 91 Executive Request	FY 91 NASULGC Recommendations
RESEARCH GRANTS P.L. 89-106			
Competitive Grants (Sec.2b)			
Plant Science	7,751	a	a
Human Nutrition	1,481	a	a
Animal Science	4,937	a	a
Biotechnology	18,775	a	a
Basic Pest Sciences	1,975	a	a
Stratospheric Ozone/Global Change	3,653	a	a
Forestry	3,949	a	a
NRI-Nat'l Resources &Environment	0	15,000	30,000
NRI-Nutrition, Food Quality, and Health	0	5,000	19,000
NRI- Plant Systems	0	50,000	50,000
NRI- Animal Systems	0	30,000[b]	30,000
NRI-Engineering Processes and Value-Added Products	0	0	11,000
NRI-Markets, Trade, and Rural Revitalization	0	0	10,000
Total Competitive Grants	42,521	100,000	150,000
SPECIAL GRANTS (SEC. 2C)			
National Programs			
Acid Precipitation	653	0	692
Animal Health	5,633	0	a
Aquaculture Research General	563	0	a
Integrated Pest Management	2,903	4,000	4,000
Minor Use Animal Drugs	226	329	329
Biological Impact Assessment	123	300	300
Pesticide Clearance	1,975	3,000	3,000
Pesticide Impact Assessment	2,437	2,968	2,968
Rural Development Centers	494	0	524
Tropical and Subtropical Agriculture	3,299	0	3,299
Water Quality and Management	6,615	10,000	10,000
Global Change	0	5,000	5,000
Total Special Grants (2c)	24,921	25,597	30,112
Special Problem Grants[c]	30,907	0	30,907
TOTAL RESEARCH GRANTS	98,349	125,597	211,019

TABLE II: RESEARCH FUNDS (continued)
(Thousands of dollars)

	FY 90 Appropriations GRH	FY 91 Executive Request	FY 91 NASULGC Recommendations
OTHER RESEARCH PROGRAMS			
Rangeland (P.L. 95-113)[a]	469	0	a
Aquaculture Centers (P.L. 95-113)[d]	3,703	0	3,703
Supplemental & Alternative Crops (P.L. 95-113)	321	918	918
International Trade Development Centers[d]	3,112	0	3,112
Critical Materials (P.L. 98-284)[e]	5,300	0	0
Low Input Sustainable Agriculture (P.L. 99-198)	4,394	4,450	4,450
TOTAL OTHER RESEARCH PROGRAMS	17,299	5,368	12,183
Federal Administration			
Direct	13,336	12,239	12,239
1890 Capacity Building Grants[f]	(5,430)	(11,000)	(11,000)
NET FEDERAL ADMINISTRATION	7,906	1,239	1,239
TOTAL RESEARCH	326,310	329,893	439,362

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[a] Incorporated within the National Initiative for Research on Agriculture, Food and the Environment.

[b] Includes funds transfered from Special Grants for Animal Health. Animal Health formula funds are continued as a seperate item.

[c] Some site specific 2c grants are included in the total for Special Problem Grants which are established to address acute problems in specific states.

dAny funding increases should be awarded competitively.

[e] Some items were moved to Supplemental and Alternative crops for FY '91

[f] See Higher Education, Table IV.

TABLE III: EXTENSION FUNDS
(Thousands of dollars)

	FY 90 Appropriations GRH	FY 91 Executive Request	FY 91 NASULGC Recommendations
BASE PROGRAMS			
Smith-Lever 3b and 3c Base Programs	242,272	246,535	256,808
D.C. Extension	946	1,000	1,000
1890 Colleges & Tuskegee U.	21,836	23,092	24,900
TOTAL BASE PROGRAMS, EXTENSION	265,054	270,627	282,708

TABLE III: EXTENSION FUNDS (continued)
(Thousands of dollars)

	FY 90 Appropriations GRH	FY 91 Executive Request	FY 91 NASULGC Recommendations
NATIONAL EXTENSION INITIATIVES			
Water Quality & Management	5,211	15,500	15,500
Improving Nutrition, Diet & Health			
Food Safety and Quality	0	2,000	5,000
Revitalizing Rural America	0	0	5,000
Competitiveness of American Agriculture			
Sustainable Agriculture	(4,450)[a]	0	2,500[b]
Youth-at-Risk	0	10,000	10,000
TOTAL NATIONAL EXTENSION INITIATIVES	5,211	27,500	38,000
SPECIFIED PROGRAMS[c]			
Expanded Food and Nutr. Ed. Program (EFNEP)	58,197	21,600	58,635
Rural Development Centers	943	0	950
Integrated Pest Management	7,110	7,164	8,250
Pesticide Impact Assessment	2,561	3,580	3,580
Financial Management	1,416	0	0
Urban Gardening	3,474	0	3,500
Farm Safety	963	0	970
Pacific Rim Program	645	0	650
1890 Extension Facilities	9,437	9,508	9,508
Renewable Resources Extension Act	2,744	0	4,000
Farmer Assistance Grants	3,325	0	0
TOTAL SPECIFIED PROGRAMS	90,815	41,852	90,043
Federal Administration, Direct	8,745	5,697	6,347
Pacific Rim Program	(645)[d]	0	(650)[d]
NET FEDERAL ADMINISTRATION	8,100	5,697	5,697
TOTAL EXTENSION	369,180	345,676	416,448

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[a] See Low Input Sustainable Agriculture under Research in Table II

[b] New program for Extension only.

[c] Established from time to time to address specific acute problems.

[d] See explanation under Specified Programs

TABLE IV: HIGHER EDUCATION FUNDS
(Thousands of dollars)

	FY 90 Appropriations GRH	FY 91 Executive Request	FY 91 NASULGC Recommendations
BASE PROGRAM			
Morrill-Nelson Act	2,810	0	2,810
OTHER PROGRAMS			
Graduate Training Fellowships	2,816	4,000	5,000
Institution Challenge Grants	987	2,000	3,000
1890 Strengthening Grants[a]	1,878	0	0
1890 Capacity Building Grants[b]	5,430	11,000	11,000
Post Doctoral Fellowships	0	0	2,000
Total Other Programs	11,111	17,000	21,000
TOTAL HIGHER EDUCATION	13,921	17,000	23,810

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[a] Included in 1890 Capacity Building Grants in 1991 request.

[b] Funded under Federal Administration, Research.

TABLE V: INTERNATIONAL AGRICULTURE PROGRAMS
(Thousands of dollars)

	FY 90 Appropriations GRH	FY 91 Executive Request	FY 91 NASULGC Recommendations
INTERNATIONAL SCIENTIFIC AND TECHNICAL COOPERATION			
Scientific and Technical Exchanges	1,591	1,816	1,900
Administration of International Research	1,415	1,433	1,700
International Organization Affairs	604	612	612
Total	3,610	3,861	4,212
INTERNATIONAL AGRICULTURAL DEVELOPMENT			
Agribusiness Promotion	301	305	305
Institutional Cooperation (ISEC)	99	100	200
PL 480 Support	64	65	65
Cochran Middle Income Fellowship Program	1,473	0	2,000
Total	1,937	470	2,570
OPERATION FAST	494	500	500
FOREIGN CURRENCY RESEARCH PROGRAM	875	0	8,000
Total OICD	6,916	4,831	15,282

COUNCIL FOR CITIZENS AGAINST GOVERNMENT WASTE

STATEMENT OF ALAN L. KEYES, PRESIDENT

Mr. Chairman and members of the Committee, I appreciate this opportunity to discuss the Rural Electrification Administration (REA). The Council For Citizens Against Government Waste (CCAGW) is a grass roots lobbying organization committed to enactment of legislation that reduces government waste and increases the efficiency of federal government operations.

CCAGW and the 350,000 citizen members of its affiliated educational organization, Citizens Against Government Waste (CAGW), urges Congress to reduce spending for the REA.

REA was originally established in 1935 to provide government loans to eligible borrowers for the purpose of extending electric service to unserved, rural areas. In 1949, REA's mission expanded to include loans for telephone service. In 1990, **REA's mission has been accomplished.**

What began as a worthwhile program to move rural America into the 20th century has led to one of the most wasteful annual spending sprees in Congress. Since 1973, nearly $20 billion of taxpayer money has been appropriated for a program with a near 99% success rate. In fact, the percentage of farmers with electricity during that time period increased by only .3%.

Congress has lost sight of REA's original purpose to bring electricity and telephone service to rural America. Congress continues to appropriate nearly $1 billion per year for loans to rural cooperatives that include financially sound utilities in urban and suburban communities, as well as exclusive resorts like Vail, Colorado and Hilton Head Island, South Carolina. This outrageous amount of Congressional spending coupled with taxpayer-subsidized interest rates of 2% and 5% has created booming industries. In fact, the combined assets of electric distribution borrowers alone exceeds $20 billion.

The Council For Citizens Against Government Waste is asking you to implement reforms to the REA so that the inequity to American taxpayers will end. We are not asking you to abolish REA or to cause financial hardship to American farmers. REA loans should go to the people who need the assistance the most. We must identify those people and target the benefits to them.

CCAGW supports reforms similar to those introduced by Congressman Jim Bates. H.R. 1232, the Rural Electrification Administration Lending Assistance Improvements Act, calls for replacing high-subsidy REA direct loans with loan guarantees for private loans. The federal deficit would be reduced by $5 billion over the next 5 years and the loan guarantees will only assist legitimate, rural borrowers.

H.R. 1232 calls for reforms implied in the 1973 amendments to the Rural Electrification Act. In 1973, Congress included language to the effect that borrowers should be encouraged and assisted to satisfy their credit needs from their own financial organizations and other sources at reasonable rates and terms. Subsidizing financially strong cooperative borrowers at 2% and 5% interest rates is not reasonable when current market interest rates are between 10% and 12%.

According to the Congressional Budget Office, moving interest rates to market levels "would have little effect on the rates of most cooperatives...as interest charges account for only a small percentage of the average ratepayer's bill." The Office of Management and Budget, the Department of Agriculture and the REA report that the average consumer's bill will go up by "only 74 cents per month." In addition, the REA states that the average income of farmers increased six times between 1948 and 1988 while the cost of electricity to the average farmer only doubled in that same time period.

Members of the committee, the time has come to recognize REA's success in bringing electricity and telephone service to rural America. The Council For Citizens Against Government Waste, the Bush Administration and the American people urge you to reduce funding for this program. By reducing funding, increasing interest rates, and targeting benefits to the needy, REA can continue to serve rural America while reducing the nation's federal deficit by $5 billion over five years.

Wasteful government spending can no longer be tolerated in a nation whose federal debt is nearing the $3 trillion mark. Fiscal sanity must be restored to this nation for the sake of our children and grandchildren.

COUNCIL OF SCIENTIFIC SOCIETY PRESIDENTS

STATEMENT OF WILLIAM F. PROKASY, CHAIR

February 12, 1990

The Honorable Quentin N. Burdick
Chairman, Subcommittee on Agriculture,
Rural Development and Related Agencies
Committee on Appropriations
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

At its semiannual meeting last December, the Council of Scientific Society Presidents (CSSP) adopted a resolution, enclosed, endorsing the expansion of the competitive research grants program at the U.S. Department of Agriculture. Last year the Board on Agriculture of the National Research Council recommended this competitive funding initiative to enhance the Nation's knowledge base in agriculture, food, and environmental science.

Funding for basic research in these areas has not kept pace with the increased demands on the Nation's agricultural enterprise. Remaining competitive in international markets for agricultural products, and at the same time promoting nutritious diets and alleviating environmental degradation, requires vigorous efforts in basic research at the frontier of science.

The Council is composed of the presidents and other senior officers of 56 professional scientific societies with a combined membership of well over one million individuals engaged in the physical, mathematical, and life sciences as well as interdisciplinary activities.

Thank you for your consideration of CSSP's position with regard to increased funding of basic research in agricultural, food, and environmental science. I would welcome the opportunity to respond to any questions or comments you might have.

Sincerely,

William F. Prokasy

William F. Prokasy

Enclosure

RESOLUTION

ENDORSING THE STRENGTHENING OF A COMPETITIVE RESEARCH PROGRAM BY THE U.S. DEPARTMENT OF AGRICULTURE

WHEREAS the long-term economic and environmental health of the United States depends greatly on agriculture; and

WHEREAS new and increasing research efforts are required to assure the safety and quality of the U.S. food supply, and to assure the manageability and sustainability of our natural resources; and

WHEREAS the Board on Agriculture of the National Research Council has proposed a new competitive funding initiative entitled "Investing in Research" to be furnished by the U.S. Department of Agriculture (USDA); and

WHEREAS only a very small fraction of USDA support for research is now awarded on the basis of competitive grants;

THEREFORE, BE IT RESOLVED that the Council of Scientific Society Presidents endorses the creation of an expanded national research initiative for merit reviewed, individual investigator research in agriculture, food, and environmental science by the USDA.

Adopted by the

Council of Scientific Society Presidents

December 6, 1989

ENVIRONMENTAL ACTION FOUNDATION

STATEMENT OF JAMES F. PIERCE, STAFF SCIENTIST

Good morning, Mr. Chairman, my name is James Pierce. I am a sraff scientist with Environmental Action Foundation (EAF). Environmantal Action Foundation, founded in 1970 by the organizers of the first Earth Day, is a national non-profit organization working on energy, solid waste, energy conservation, and toxics issues.

My particular field of endeavor involves the promotion of biological alternatives to chemical pesticides. Environmental Action Foundation assists local civic groups, state and local environmental organizations, and concerned citizens in urban/suburban settings who are concerned about the aerial application of chemical pesticides to control the gypsy moth. We advocate the integrated pest management (IPM) approach to gypsy moth control and believe that all government agencies responsible for gypsy moth control; at the federal, state, or local level, by following this approach could significantly reduce the use of chemical pesticides and the adverse effects they pose to the environment and public health.

We appreciate very much the opportunity to testify on behalf of the appropriation for the Agricultural Research Service (ARS). Specifically, EAF wants to testify on behalf of increased research for control of the gypsy moth. It is our understanding that ARS has responsibility within USDA for conducting research for control of the gypsy moth in non-forest environments whereas the U.S. Forest Service has responsibility for research related to forests.

As the gypsy moth continues to spread into previously uninfested areas, more and more valuable hardwood trees are being threatened in non-forested areas. Gypsy moth populations in urban/suburban areas are causing widespread defoliation and damage, especially in years of drought stress. Such tree damage is causing great concern, and the public is increasingly demanding pest control that is effective and environmentally desirable; current control programs are not meeting the needs of all property owners and managers. Development and effective implementation of improved programs can greatly reduce defoliation and mortality of trees in urban environments and result in maintaining or increasing the value of recrearional and residential property and in avoiding very costly tree removal.

While ARS scientists have made considerable progress in developing improved programs for controlling the gypsy moth in large urban parks and other public lands, the current effort involves permanent funding for only one full time scientist conducting field research. In view of the many promising leads for improving gypsy moth control in non-forested areas, we believe that every reasonable effort should be made to substantially expand field evaluations.

Inquiries to the ARS National Program Staff on how additional resources could be utilized by ARS resulted in the following reply:

"Should opportunities arise in the future that would permit expansion of our national program, there are several high priority research areas that could make substantial contributions to management systems for the gypsy moth in urban/suburban environments. Expanded research thrust areas would include (1) improvement of sampling procedures for egg masses, larvae, and adults, including the development of technology associated with the use of pheremone traps for monitoring high density adult populations; (2) characterization and evaluation of new strains of Bacillus thuringiensis (B.t.) and of the gypsy moth nuclear polyhedrosis virus; (3) development of a ground-based management program, including the use of barrier bands for individual tree treatments in urban areas; (4) development and evaluation of improved procedures for the use of pheremones for population suppression through mating disruption; (5) expanded development and implementation of a compurterized decision-making system for urban areas to include homesites and communities, and the integration of all site-specific programs into a unified urban program; and (6) sponsorship of the economic assessment of the cost-effectiveness of various alternative supportive techniques."

"These thrust areas were identified over the past 3 years through an interagency review of the ARS research program which included a planning workshop held in March 1989 and a variety of other planning meetings. Resources necessary to implement such an expanded agenda would require two additional scientists and associated support as well as resources for the extramural funding for economic research. Based on current budgeting guidelines, this effort would require a permanent increase of $500,000 per year."

EAF fully endorses these expressed needs and respectfully requests that your subcommittee approve an increase in appropriations of $500,000 per year which will enable ARS to expand its research and development efforts on biologically based methods of gypsy moth control. Such efforts are especially important for gypsy moth management in urban/suburban areas where exposure of large numbers of people to chemical insecticides may be undesirable.

Thank you for this opportunity to express our views.

EXPERIMENTAL PROGRAM TO STIMULATE COMPETITIVE RESEARCH

STATEMENT OF H. STEWART VANSCOYOC

INTRODUCTION.

The Coalition of EPSCoR States was formed approximately one year ago to work in support of the concepts embodied in the National Science Foundation's Experimental Program to Stimulate Competitive Research (EPSCoR). The National Science Foundation established EPSCoR in 1979 for the purpose of developing the capacity of scientists and institutions in eligible states to compete more successfully for Federal research funding from NSF and other Federal agencies. The EPSCoR approach involves a coordinated state-wide planning effort, designed to identify programs which will facilitate the creation of pockets of research excellence within each state. Since 1979, 16 states and Puerto Rico* have been designated by NSF as eligible for participation.

The Coalition was formed to increase awareness of the EPSCoR program, to secure additional funding for it at NSF, and to encourage other agencies and departments of the Federal government to adopt complimentary initiatives. We support, with some suggestions for modification, the Department of Agriculture's efforts to include research strengthening grants within the National Initiative for Research on Agriculture, Food and Environment.

Characteristics of the EPSCoR States.

Presently, Federal research funding is concentrated in relatively few states and regions of the nation. As Chart I illustrates, the 16 EPSCoR states and Puerto Rico, while containing 13% of the United States population, receive only 5.6% of Federal research and development dollars. In contrast, the top five research states, with 27.9% of the population, receive 44.5% of Federal research and development dollars. It is not surprising, therefore, -- in fact it may be related, -- that the EPSCoR states tend to have a per capita income that is lower than the national average and substantially lower than the top five research states. This is shown in Chart II.

The EPSCoR experiment, while funded at only one-quarter of one percent of the NSF budget, was designed as a first step in addressing this disparity. As detailed in our written submission, the EPSCoR approach involves the establishment of a state-wide coordinating mechanism to:

- Identify state and institutional barriers to competitive research
- Develop a comprehensive improvement plan supported by state and institutional resources.
- Undertake a merit review of all EPSCoR programs and;
- Implement the improvement plan focusing on infrastructure improvement, research enhancements and human resource development.

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*Alabama, Arkansas, Idaho, Kentucky, Louisiana, Maine, Mississippi, Montana, Nevada, North Dakota, Oklahoma, Puerto Rico, South Carolina, South Dakota, Vermont, West Virginia and Wyoming.

The result has been a significant improvement in state support for research and development in the EPSCoR states. As shown in Charts III and IV, Federal support as a percent of total spending for research and development at our research universities continues to lag significantly behind both the national average for Federal support and the percentage of support provided to the top five states. On the other hand, state support in the EPSCoR states is twice the national average and over seven times as great on a percentage basis as it is in the state that receives the greatest amount of Federal support.

The National Initiative for Research on Agriculture, Food and Environment.

As part of its budget request of this Committee, the Department of Agriculture has requested $100 million in FY '91 for the National Initiative for Research on Agriculture, Food and Environment (the "Initiative"). This represents a second step toward an overall $500 million program as recommended by the National Academy of Sciences.

We are well aware of the controversy surrounding this Initiative, particularly as it relates to the ability of institutions in EPSCoR states to successfully compete. It is our purpose before this Committee to urge your support for efforts to assure that EPSCoR states are not left out of this Initiative as it moves forward. Absent a specific program to assure improvement in our ability to compete, history would indicate that the majority of funds will once again find their way into a small number of states with established, largely Federally funded, scientific infrastructures.

We are pleased to see that the Department of Agriculture has set aside 10% of the funds in this program for "research strengthening grants". We are concerned, however, that this amount is not sufficient. Additionally, we are concerned that the program for achieving the maximum improvement in competitiveness possible from these grants needs to be more fully defined.

Therefore, we would suggest the following guidelines for a program to assure reasonable geographic distribution in the awarding of Initiative grants:

1. Ten percent of the funds in FY 91 should be set aside for planning grants and infrastructure improvement in EPSCoR States. By coordinating with the State EPSCoR mechanisms already in place, this would assure that this funding is integrated with the overall development of the scientific enterprise within these states. The purpose of this infrastructure improvement would be to increase the number and quality of grant applications submitted by EPSCoR states.

2. A goal should be established to have 20% of the actual research grant awards made to EPSCoR states. If the number of high quality research proposals submitted from EPSCoR states is not sufficient to reach this goal, the Department of Agriculture could so report annually to the Congress, together with their suggestions for additional infrastructure improvements to allow that goal to be reached.

Conclusion.

In 1979, NSF, faced with a requirement in its charter that it "avoid undue concentrations of research" initiated EPSCoR in an effort to broaden the distribution of its research funds. As developed over the last decade by NSF, this state-based model has proven effective; two out of the last three engineering research centers awarded by the Foundation went to institutions in EPSCoR states.

We in the Coalition believe that this proven model should be extended to other departments that fund research, including the Department of Agriculture. We do not hold this view alone. In several Congressional hearings, most recently before the Senate Budget Committee, Presidential Science Advisor Dr. D. Allan Bromley has commented favorably on this notion. In addition, the National Association of State Universities and Land-Grant Colleges (NASULGC) has adopted a resolution specifically advocating extension of the EPSCoR model. Our proposal here today is a start in this direction, and we hope that the Committee will give it favorable consideration.

Chart I

COMPARISON OF POPULATION AND FEDERAL R & D $$ AS PER CENT OF THE U.S. TOTAL

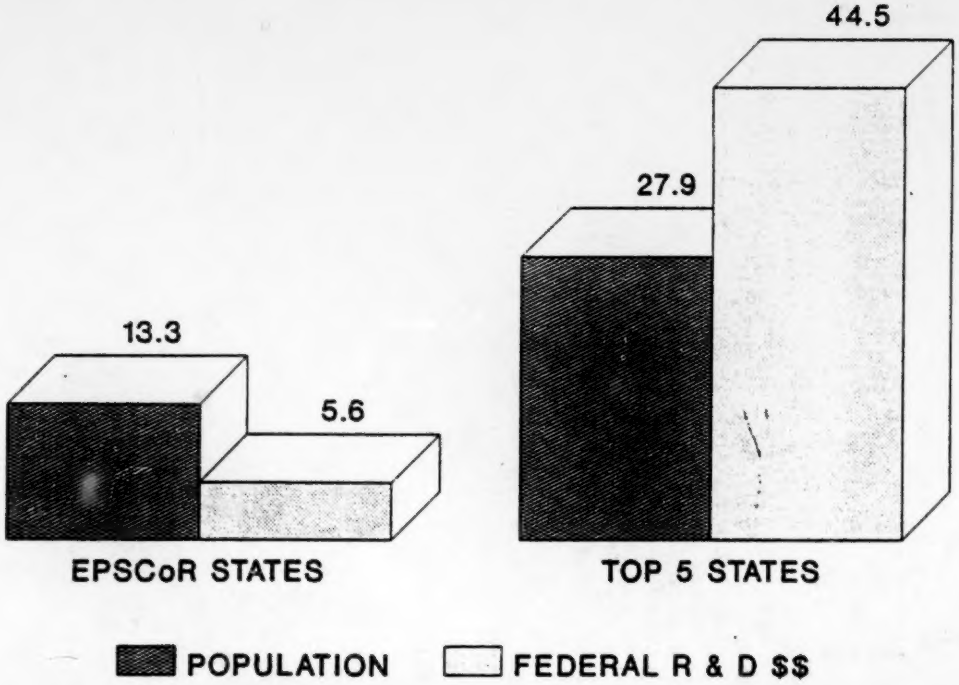


Chart II

PER CAPITA INCOME, 1988
PER CENT OF NATIONAL AVERAGE

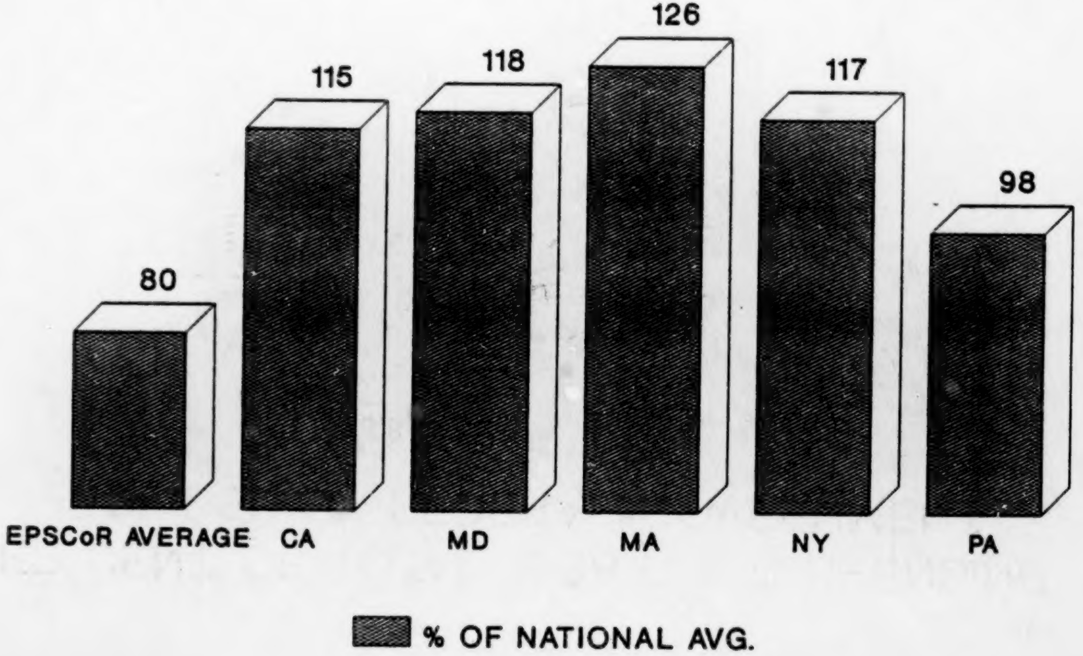


Chart III

PER CENT OF TOTAL 1988 R & D SPENDING PROVIDED BY FEDERAL GOVERNMENT

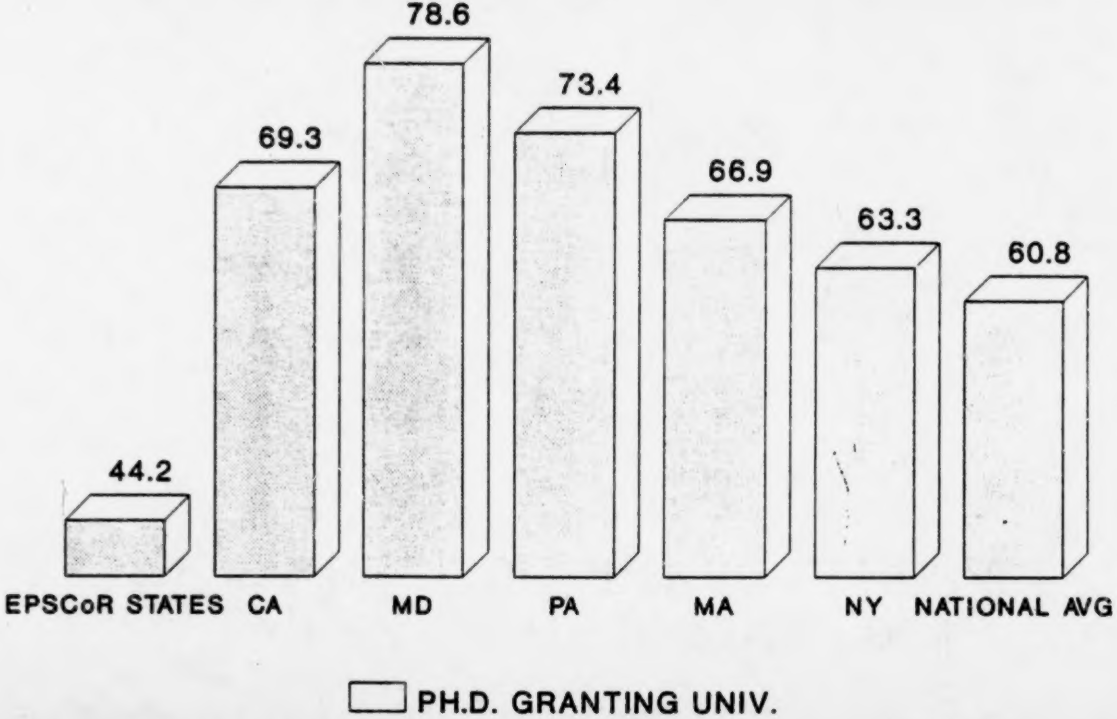
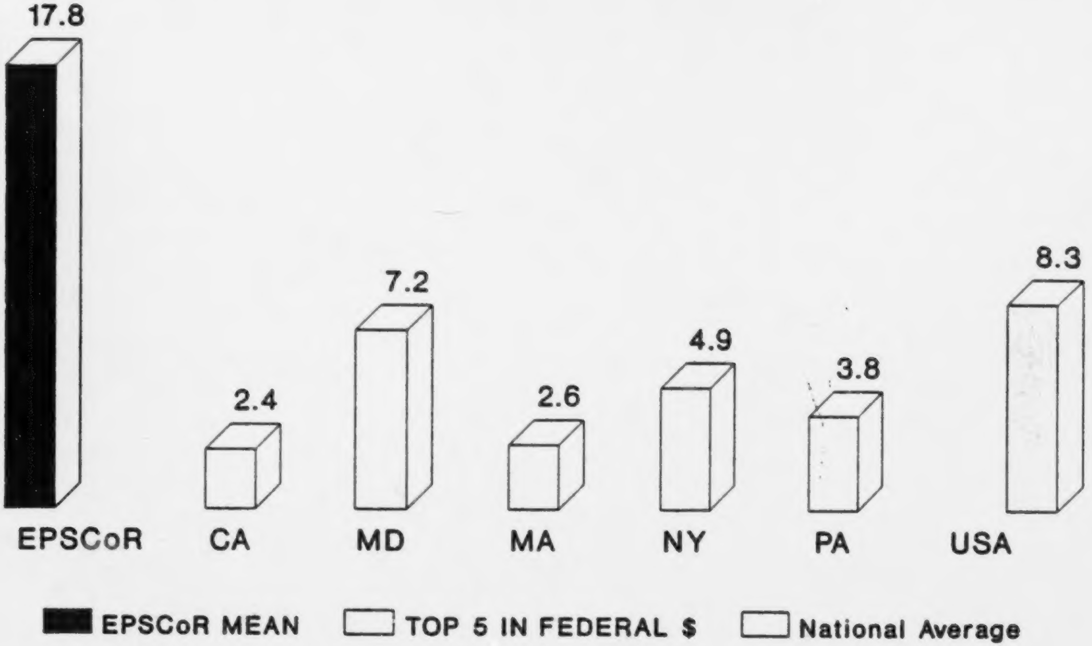


Chart IV

RESEARCH AND DEVELOPMENT SPENDING BY DOCTORATE-GRANTING UNIVERSITIES FY 88

% FUNDS FROM STATE AND LOCAL GOVERNMENT



Source: National Science Foundation

FARMERS ADVISORY COMMITTEE TO USDA-ARS RESEARCH STATION, AKRON, CO

STATEMENT OF GILBERT LINDSTROM, CHAIRMAN

This is an urgent request for increased funding for research at the USDA-ARS Central Great Plains Research Station, Akron, Colorado. The research detailed in the following pages has the potential to revitalize the economy of rural areas in the Central Great Plains of Colorado, Kansas and Nebraska.

New cropping systems that maximize the use of precipitation can mean increased profits for farmers and ranchers on 24 million acres in the Central Great Plains.If these research findings can be refined and are adopted by farmers, a potential increase in gross income in Colorado alone would be $275 million per year. If only 50% of the farmers adopt the practices the impact would still be over $137 million per year. Equal adoption rates in Nebraska and Kansas would at least quadruple the impact.

PRESENT ECONOMIC SITUATION:

1. In Colorado, 2.5 million acres of wheat are grown each year in a wheat-fallow system. Therefore each year there is also 2.5 million acres of fallow land that produces no crop. Wheat production in eastern Colorado has had an average total farm gate value of $235,000,000 per year since 1980. Gross returns per acre, based on the wheat-fallow system, is about $47 per acre per year.
2. Projections of USDA-ARS and Colorado State University scientists are that a 3 year rotation would increase farm gate income $55 per acre compared to wheat-fallow. This means an added gross income of $275 million per year. If only half of the farmers adopt the new rotations the increase in gross income still would be over $137 million per year.

NEEDED RESEARCH AND TECHNOLOGY TRANSFER:

1. Research emphasis will be placed on farming systems that increase precipitation use efficiency, reduce erosion, preserve water quality and increase farmer profits.
2. A vigorous campaign will be launched to transfer the new technology to the farm. A network approach with on farm research-demonstration activities would be the key component. Economic analysis will be an integral part of the on farm tests.

FUNDING NEED:

1. $980,000 per year for 8 years to the ARS-USDA Great Plains Research Station at Akron, Colorado with cooperative agreements that share the funding with the Nebraska, Kansas and Colorado State Experiment Stations.

POTENTIAL RETURN ON RESEARCH INVESTMENT:

1. The total investment $7.8 million for the 8 year funding period could return nearly $2 billion in the three states in only 5 years.

ENVIRONMENTAL BENEFITS

1. Improved erosion control via crop residue maintenance on the soil.
2. Improved ground water quality via reduced leaching of fertilizer.
3. Reduced use of pesticides via new crop rotations that impact weed, disease and insect problems.
4. Integration of crop/animal production systems that will enhance rural revitalization.

CENTRAL GREAT PLAINS RESEARCH STATION
USDA-ARS, Akron, CO

New Crop and Soil Management Systems

An Opportunity to Increase Farm Profits in Eastern Colorado

A RESEARCH PROPOSAL FROM CONCERNED WHEAT FARMERS AND RANCHERS IN EASTERN COLORADO

Justification:

Economic strength, social stability and a sustainable, environmentally acceptable agriculture depend on maximizing water use efficiency throughout the Great Plains region. Present cultivation practices, using the wheat-fallow system have resulted in extensive erosion by wind and water and a dependence on government subsidies. Saline seep development indicates inefficient water use in many areas. Conservation tillage practices to control soil erosion further compound water problems because of enhanced infiltration of water in the subsoil. When this water is not used by crops, it accelerates movement of soluble salts and agricultural chemicals into the ground water or creates unproductive seep areas. National concerns for promoting an economically sustainable agriculture, which is environmentally

sound, give impetus to the need to develop dryland cropping systems that promote more efficient use of soil and water while protecting the environment. New cropping systems that maximize the use of water can mean increased profits for farmers and ranchers on 29 million acres in the Central Great Plains.

Present Economic Situation:

Winter wheat is the primary dryland cash crop produced in the Central Great Plains. In Colorado alone, 2.5 million acres of wheat are grown each year. Wheat production is almost all in a wheat-fallow system. Therefore, each year there is also a 2.5 million acres of land that produces no crop. Wheat production in eastern Colorado has averaged 75 million bushels yearly since 1980 with a total farm gate value of $235,000,000 per year. Gross returns per acre, based on the wheat-fallow system, is about $47 per acre per year.

Preliminary research results of USDA-ARS and Colorado State University scientists project that adoption of new crop production systems could increase farm gate income 2.5 times in eastern Colorado. Extended rotations with fewer summer fallow periods will permit production of more crops per unit time and a wider diversity of crops. Projections are that a 3 year rotation like wheat-corn-fallow would increase farm gate income $55 per acre per year compared to wheat-fallow. This means an added gross income of $275 million per year on the 5 million acres currently in a wheat-fallow cropping system. Adoption of a continuous cropping system is projected to increase farm gate income $90 per acre compared with wheat-fallow. This would mean $450 million per year of added income. However, because of extremely limited moisture conditions in some years, continuous cropping may not always be possible. Additional research on flexible cropping systems, wherein soil moisture supply at seeding and expected growing season precipitation can be evaluated and risk probabilities determined is needed.

Similar economic benefits will be obtained across other wheat growing areas in the Central Great Plains.

Needed Research and Technology Transfer:

Information is lacking regarding the match or synchronization of crop production systems with particular climate and soil conditions, and best rotations for utilization of precipitation and sustainability. The ARS facilities and expertise at the USDA Central Great Plains Research Station combined with those of Colorado Agricultural Experiment Station offer a unique opportunity to expand this team research effort with the specific objective of developing dryland farming systems for the Central Great Plains. Emphasis will be placed on farming systems that increase precipitation use efficiency, reduce erosion, preserve water quality and ensure economic sustainability. Specific projects include: 1) Evaluation of selected crop rotations both on station and over a range of climate-soil situations in eastern Colorado; 2) Identification of alternative dryland grain and forage crops to be used in rotation; 3) Evaluation of tillage needs and weed control practices; 4) Fertility needs of crops within rotations; 5) Net income and income variability of rotations; 6) Soil erosion control; 7) Water use by crops within each rotation.

Modern agricultural research and technology transfer must address problems on a "system basis". Dryland farmers today are managers of complex production systems involving plants, animals, soil, climate, economics and technology. A vigorous communication effort in technology transfer therefore is also necessary is research findings are to bring new economic life to the Central Plains in a reasonable time frame. A network approach to technology transfer will be used with on farm research-demonstration activities as a key component. It is critical that the communication and adoption of new information to the user be achieved as rapidly as possible.

Funding:

A total of $980,000 per year for 8 years to USDA-ARS is requested. Funds will be allocated as follows:

- $535,000 to the ARS-USDA Great Plains Research Station at Akron Colorado, for development of alternative crops, tillage practices, crop sequencing, fertilizer needs, weed and disease control techniques, and erosion control technology.
- $445,000 to the Colorado Agricultural Experiment Station, through a cooperative agreement, to further develop practical crop management systems specifically designed for eastern Colorado soils and climate. Field scale experiments with cooperating farmers will

be conducted to expedite the direct transfer of new technology to farmers and other components of agribusiness such as bankers, supplies of fertilizers and chemicals, and other government agencies. Opportunities for integrating cropping systems with livestock production will be explored and range tested at Colorado State University's Eastern Colorado Range Station located near Akron, Colorado.

Potential Return on Research Investment for Colorado Farmers and Ranchers:

Assuming adoption throughout eastern Colorado of a wheat-corn-fallow rotation or a similar 3 year rotation, the investment in research ($7,840,000 over an eight year period) would lead to an increase in gross income of $1.37 billion over a five year period (based on present corn and wheat prices). If only 50% of the farmers follow our recommendations, the increase in gross income would be about $690 million over a five year period. In either instance, the return on this investment in research would be excellent. See Table 1.

TABLE 1
Returns on Research Investment

Program	Costs-8 Yrs. ($ Millions)	Returns-5 Yrs. ($ Billions)	Farm Gate Income ($ Billions)
Status-Quo	-	-	1.2(1)
Planned Program			
100% Adoption(2)	7.84	1.4(3)	2.6
50% Adoption(2)	7.84	0.7	1.9

(1) Eastern Colorado wheat-fallow production system has farm gate value of $235,000 per year or about $1.2 billion for 5-year period.
(2) Adoption of recommendations by wheat growers, Eastern Colorado.
(3) Tax return on $1.4 billion at 15% is $210 million. Therefore, the 8 year research investment of $7.8 million returns to the government are over 30 fold. A 50% adoption rate would result in a 15 fold return to the government.

These benefits would be expected to accrue further over time and the return on this investment over a 20 to 25 year period would be far greater. There would also be a multiplier effect on unknown dimensions on the economy of eastern Colorado. Similar adoption rates and economic results could be expected across the Central Great Plains.

Environmental Benefits:

Large environmental benefits accompany the adoption of the new management systems. Soil erosion is decreased via the maintenance of crop residue on the soil surface. Ground water quality is enhanced by reducing the leaching of nitrates and pesticides via improved efficiency of water use by crops. Proposed crop rotations reduce the impact of weeds and ultimately reduce pesticide use for weed, insect and disease control. Finally, integration of crop/animal production systems will enhance rural revitalization.

FDA COUNCIL

STATEMENT OF TERRY LIEREMAN

Mr. Chairman, Members of the Subcommittee, thank you for the opportunity to present a statement on behalf of the FDA Council, in support of increased funding for the Food and Drug Administration.

The FDA Council is a broad based coalition with representatives from health voluntary organizations, professional societies and industry, who have come together to advocate for the resource needs of the FDA. This is a group that is not always seen advocating on the same side of many policy issues. However, the FDA's ability to carry out its mandate and protect the health and the welfare of each citizen is vital to every segment of society, and this diverse group of organizations speaks with unison in urging this Subcommittee to make the resource needs of the FDA a top priority. The resource needs of the Agency are clear cut -- personnel, training, facilities, equipment and instrumentation.

We thank the Subcommittee for the support that the FDA received last year (FY90). It was an excellent start on re-vitalizing the Agency and preparing it to meet the 21 Century. Unfortunately, we are back again this year, to re-iterate concerns and request your support.

Over the past decade as a result of the expansion of the FDA's authorities, there has been a very serious erosion of resources within the Agency. In fact, Chairman Dingell was quoted in a December 4, 1989, New York Times article saying that the cutbacks within the FDA have "represented a slow, persistent strangulation of the Agency."

The constraints which the Agency faces in all areas are almost intolerable, and may ultimately force the FDA to choose between the types of regulatory services it provides for us. Resources to safeguard the foods we eat -- our fruits, vegetables and seafood - are being pitted against our ability to approve drugs to alleviate chronic illnesses, or provide relief for persons who suffer from rare or life threatening diseases. Unless we continue to build upon your efforts last year to address these crucial needs, we are taking risks with the public health and welfare of our citizens.

The members of the FDA Council were pleased that the Administration's Request included increases in funding for many high priority needs at the FDA, including the following.

- AIDS
- New Drug and Device Review
- Generic Human Drug initiatives
- Field restoration and forensic capabilities
- Food safety and monitoring initiatives
- Support of the National Vaccine Program

However, we believe that the Budget Request falls short in several high priority areas. Therefore, we request that you provide the Food and Drug Administration with an appropriation of $730 million. This is a $45 million increase above the 1991 President's Budget Request. This increase would be used to address the initiatives outlined below, which are crucial to the operation of the Agency and were not included in the President's Request.

- Repair and renovation of existing facilities until the consolidated facility is available.

- Equipment and instrumentation for FDA laboratories, field research sites, and data management systems.
- Training programs to develop a cadre of regulatory reviewers to provide for future needs of the FDA.

Last year, a GAO Report was released outlining many of the problems within the Agency. While the Report did little to recommend action to alleviate these crucial problems, it did bring to light several important facts which we would like to re-iterate here for you.

Personnel

Let us begin by clearly stating our gratitude for the hard work of the individuals at the FDA. The demands of their jobs are significant and it is because of their commitment and dedication to the mission of the FDA that the Agency has met its formidable challenges. However, they have done so under circumstances that would not be tolerated in most successful corporations throughout this Nation.

The GAO analysis of the personnel situation at the FDA, based upon data from the FDA and the Office of Personnel Management, has indicated that serious problems exist with regard to attrition of FDA personnel when compared to other Federal agencies. Attached is a copy of a chart which clearly demonstrates that the turnover rate of the following FDA employees -- biologists, engineers, statisticians, microbiologists, pharmacologists, physicians and veterinarians -- is far in excess of the rate in other government agencies.

The FDA has had one senior position vacant since 1983, and others have taken six months to two years to fill. We believe that this is only a predictor of the future, as close to three-quarters of the Agency's senior staff will be eligible for retirement by the mid-1990's. Unless we address the disincentives which exist within the Agency to attract top level scientific staff now, the FDA will face serious deficits within the next several years.

It is estimated that a **minimum** of 900 **new FTE's** is required to address the programmatic needs at the FDA. This recommendation is included in the 1991 President's Budget Request. We believe that the severe personnel shortages within the Agency have caused many delays in the review of health products. High priority programs which will require additional scientific staff with expertise in program areas and training of new and existing FDA personnel are outlined below.

- Cancer Drug Development
- Drugs to treat HIV infection
- Biologic agents and immune modulators to treat diseases like cancer and other immunosuppressive disorders
- Antiviral agents
- Biotechnology
- Drugs to treat opportunistic diseases associated with immunosuppression caused by cancer, immune disorders and AIDS
- Radioimmune assays and radio-diagnostic agents
- Novel vaccine compounds
- Food substitutes
- Veterinary agents

We urge you to support the requested increase in personnel so that the FDA can begin to stabilize its programs and address the crucial regulatory issues at hand.

Facilities repair and restoration

The GAO has estimated that current FDA space is only 75% of the recommended allocation per employee. To address this issue, this Subcommittee has already laid the groundwork to improve the working conditions of FDA employees. In the 1990 appropriation, funding was made available to proceed with the engineering and design of a consolidated facility to bring the employees presently housed in 23 separate facilities under the same roof.

However, while plans for the consolidated facility are progressing, it will be necessary to provide for repair and renovation of existing facilities to enable FDA staff to occupy present office and laboratory space until the consolidated facility is completed, several years down the road. Therefore, funds are needed in FY 1991 to support the following.

- Rehabilitation and repair of existing buildings to bring laboratory space into compliance with Federal regulations.
- Funding for completion of the construction of the FDA AIDS building.
- Repair of facilities to meet safety requirements and provide routine maintenance to ventilation systems, air conditioning equipment and electrical equipment such as elevators.
- Minor renovations to maximize existing office space for FDA personnel.
- Upgrading of field facilities.

Equipment and Instrumentation

In FY 90, funding was made to the Agency to begin an automated system for product review. In order to increase the efficiency of product review within the Agency, additional resources are necessary to fully convert all aspects of the FDA to a data management system.

Equipment needs extend beyond this area. It is estimated that approximately 29% of the scientific equipment is out of date and should be replaced. The FDA is responsible for reviewing and approving cutting edge technology -- whose sophistication will only increase over the next decade as our investment in molecular biology pays off in terms of product development. In order to meet the challenge of this technology, it is imperative that the Agency be as state-of-the-art and advanced as the industry which it regulates.

Training

In the past decade, advances in molecular biology have lead to a revolution in the conduct of research and the development of technologies translating our research efforts into the hands of consumers. In the next decade, it is anticipated that substantial research progress will double the number of product reviews, from 15,000 to 30,000, at the FDA.

These advances mandate that the FDA have the resources for two important training programs -- one that addresses the training needs of current FDA staff to assist in recruitment and retention, and one that addresses the training of extramural researchers in regulatory review.

The pace of science is moving so fast that the FDA must have funding to support its scientists in their educational efforts. This includes not only educational programs within the FDA, but also educational opportunities offered by professional societies to keep abreast of cutting edge research. If we fail to help these important scientists keep their knowledge and expertise current, it will be reflected in inadequate regulation of the industry or delays in the review of important product applications.

Further, the FDA needs to address the critical problem of training a cadre of experts within the scientific community. This April, the NIH and the FDA will embark on an excellent prototype of a program -- to train researchers in clinical trials, and regulatory review. The NCI's Pediatric Oncology Division and the FDA have established a joint fellowship program which will allow clinical researchers to spend 60% of their time at the NCI conducting clinical trials, and 40% of their time over a three year period learning aspects of regulatory medicine. This type of training is crucial in assure that tomorrow expert staff will be available to the FDA to support its program needs. We urge you to take this program under serious consideration and support similar efforts for other diseases, such as AIDS, Alzheimer's, and cardiovascular disease.

User Fees

The FDA Council is opposed to the concept of users fees included in the 1991 President's Budget Request and recognizes this Subcommittee for its efforts in previous years to reject this proposal. We believe that the implementation of such a proposal could significantly compromise the FDA and urge you to fully restore the $157 million by providing a direct appropriation to the FDA in that amount for the following reasons.

* If the Food and Drug Administration is statutorily required by the President and the Congress to protect the health and welfare of Americans, the requisite Federal funding should be made available to carry out this mandate.

* Funding by a regulatory Agency by the regulated industry is a conflict of interest.

* Requiring payments related to FDA review of new products is a tax on research and development which will in all likelihood be passed off to the consumer. Further, a tax on innovation at a time when our competitiveness in this and many other arenas is under question will not provide incentives to companies to develop technologies.

* The amount of revenue which could be brought into the Treasury under this proposal is unclear, as the FDA, CBO and CRS do not have any clear data with regard to the number of pharmaceutical, medical device and food and cosmetic plants which exist or product applications which will be received in FY 1992.

* The program is not presently authorized and could not be authorized in a timely fashion to impact the operating budget of the FDA in FY 91.

* The is clearly a substitution for appropriations, as the proposal does not bear any relation to the cost of product review.

Mr. Chairman, Members of the Subcommittee, we recognize that you have many competing demands and many worthy programs to address in your deliberations. We believe that the safety and welfare of the American public should be placed at the top of this list, as the measure of greatness of a Nation is depended upon the health and welfare of its citizens. Thank you for the opportunity to present our statement to you.

LEAVING IN DROVES?

The quit rate of Food and Drug Administration employees as compared to the quit rate of workers government-wide. Figures do not include retirements or resignations.

	Fiscal 1985 FDA/Gov't.-wide		1986 FDA/Gov't.-wide		1987 FDA/Gov't.-wide	
Biologist	5.7%	1.9%	1.9%	1.7%	8.0%	2.1%
Biomed chemist	12.5	4.3	12.5	6.0	3.7	4.5
Engineer	1.3	2.3	2.5	2.4	3.1	2.7
Statistician	2.1	4.0	6.7	3.7	6.3	2.1
Medical officer	5.4	4.8	10.8	5.2	3.2	5.9
Microbiologist	1.1	2.5	2.1	2.3	3.9	3.4
Pharmacologist	0.9	2.0	0.8	1.6	9.6	4.6
Physicist	0.0	2.6	7.4	2.4	4.0	1.9
Veterinarian	1.7	1.4	0.0	1.7	2.0	1.6

Source: General Accounting Office analysis based on Food and Drug Administration and Office of Personnel Management data

FEDERATION OF AMERICAN SOCIETIES FOR EXPERIMENTAL BIOLOGY

STATEMENT OF WILLIAM L. DEWEY, PRESIDENT

I am writing in regard to the fiscal year 1991 appropriations for the Department of Agriculture. In the absence of public hearings this year I request that this letter be shared with the members of the subcommittee and included in the written record.

As President of the Federation of American Societies for Experimental Biology (FASEB) I appreciate this opportunity to present the Federation's views. The Federation consists of seven scientific societies with a combined membership of almost 30,000 biomedical researchers. The members represent every major research, educational and clinical institution in the United States. FASEB has counted 116 Nobel Laureates from among its members since the organization was founded in 1912.

My remarks address two areas of the USDA budget request of direct concern to our members. The first is the traditional Competitive Grants Program which is proposed to become part of the new National Research Initiative. The Initiative is an important proposal aimed at assuring that American agriculture retains its leading role in an increasingly competitive world. As such, it calls for the most serious consideration. However, under the format in which it is presented it does not recognize the importance of human nutrition research which we believe should be funded at $5 million as a separate line item.

The second area of direct concern is the item for Animal Care carried out by the Animal and Plant Health and Inspection Service (APHIS). We join with many other research oriented organizations in urging that this program be funded at the $12 million level to assure that the APHIS officials responsible for assuring compliance with the Animal Welfare Act are properly trained and adequate in number.

Witnesses have described the National Research Initiative in detail. I need not duplicate their remarks here. Members of this Subcommittee are well aware of the public's growing concern over environmental damage, water quality, food safety, and the growing perception of the linkage of diet and health. American agriculture must meet these concerns while maintaining its competitive position internationally.

It can only do this if it has access to the results of the best research available. The necessary research includes both basic and applied. The results of applied research are often dramatically evident to the public and support is more easily justified. But it must not be forgotten that the dramatic "breakthroughs" of applied research are only possible because of the steadily increasing knowledge and understanding of life processes supplied by basic research.

The USDA support for this vital basic research contained in the National Research Initiative reflects an ambitious effort to meet our national challenges. The development of the Initiative's concept is unique in that it has not sprung from one interest group's focus on a particular problem, but rather has grown out of an extremely broad consensus that American society is turning to a range of emerging issues USDA is best positioned to meet.

The National Research Council in its report "Investing in Research," concluded a $550 million research program was needed to meet the challenges presented. The Administration has adopted the concept if not the figures proposed in the report. It is critical that Congress examine the structure of the Initiative as presented to assure it contains the appropriate mix of competitive grants, directed multi-disciplinary teams, institutional support and administrative coordination.

One flaw we see involves a dangerous disregard of the importance of nutrition research. Knowledge of the content and effect of our food should be the starting point for agriculture's efforts to meet its responsibility to the nation's diet and well-being.

Yet in the budget request before you nutrition research is only one component of a line item designated "Nutrition, Food Quality and Health" for which $5 million is requested. By far the larger number of issues addressed under this heading are directed to food processing, packaging, and patterns of consumption.

All of these latter are legitimate responses to clear public concern in these areas. Yet the intensity of that public concern leads us to conclude that whatever funds may be provided under that line item will be devoted entirely or in large part to issues of food quality and safety. Support for critical research in human nutrition would consequently diminish or disappear. In view of the importance of basic research on human nutrition, we urge that it continue to be funded as a separate line item as it now is under the present Competitive Grants Program.

By its nature basic research cannot be productive without long-term stable support. There are no lucrative breakthroughs providing profits that can be used to fund the work of other researchers in their accumulation of knowledge and data.

Yet support for human nutrition research has never reached the levels authorized for it over a decade ago and has in fact declined to $1 million in fiscal 1989. Although increased slightly this year, the program is being maintained at a level too low to take advantage of the important research opportunities now available. Still, important work is being done that is indicative of what more could be accomplished if adequate support were assured.

A nutritionist in Louisiana working on arachidonic acid metabolism with rat models is determining that the evidently beneficial effects of consuming fish oil is dependent upon the ratio of vegetable oil consumed. Another researcher in Iowa is seeking better means of establishing boron concentrations and their nutritional sources. Other research has suggested boron has bone strengthening properties.

Lowering cholesterol through consumption of fish oil and the prevention of osteoporosis, or bone deterioration, are two issues of intense and growing interest on the part of the public. Guidance sought by the public can only come from the data obtained and published by investigators such as those whose work I have cited. The Competitive Research Grants Office could probably provide hundreds of similar instances of basic research in which the immediate results are not apparent, but without which solutions to public concerns are not possible.

What is true for nutrition is equally true in other fields of basic research. There are demands today for new plant forms that will withstand possible climatic changes, or that can provide their own protection against predators. There are demands for new strains of animals whose products are more acceptable to changing consumer demands. These demands can be met. But the ability to do so is dependent upon the knowledge and data being developed through basic research in many fields. All are critical for the resurgence in American agriculture we all seek.

Turning to the area of animal welfare we urge that funding for animal The welfare under the Animal and Plant Health Inspection Service (APHIS) be increased to $12 million. The work of many of our members must depend upon the use of animals. We believe it is important that the public which supports much of our research be assured that these animals are properly used and cared for. APHIS is charged with providing that assurance and it is critical that APHIS have the personnel, resources, and training required to meet this charge placed on it by Congress in amending the Animal Welfare Act in 1985. The increased funding level is recommended only after wide consultation among research organizations and with groups genuinely interested in animal welfare.

I would be pleased to respond to any questions you may have.

FEDERATION OF AMERICAN SOCIETIES OF FOOD ANIMAL SCIENCES

STATEMENT OF DR. ROBERT G. ZIMBELMAN, EXECUTIVE VICE PRESIDENT

We appreciate the opportunity to provide input to the appropriations process for Agriculture, Rural Development and Related Agencies. This testimony is provided on behalf of the Federation of American Societies of Food Animal Sciences (FASFAS). We are a newly formed federation of four long standing professional societies deeply involved in animal agriculture, namely: American Dairy Science Association (ADSA), American Meat Science Association (AMSA), American Society of Animal Science (ASAS), and Poultry Science Association (PSA). The combined membership of these four societies exceeds 17,000. A major purpose of our federation is to speak with one voice on animal agriculture issues. This has not always occurred in the past. We felt that it was a disservice to policy makers, such as yourselves, when you heard a variety of messages which were not necessarily supportive, or perhaps were contradictory.

Our members are involved in research, teaching, and extension in universities, in private industry and in government. Therefore, we have an interest in the total spectrum of animal agriculture including, in particular, federal funding for research and extension.

An initial activity, prior to formalization of the federation, was the issuance of a document on research priorities. Attached to this testimony is a copy of these Food Animal Research Priorities issued by a task force representing the four societies. The following summary of potential impact on the public, as well as a description of the scientific approaches from the brochure, is provided for these four major priorities.

1) Our first priority is for research to produce animal products of superior quality. Quality includes a lower fat content, an improved protein quality or content, or other changes to alter our products to meet nutritional needs and consumer desires. Progress already been made in some regards, particularly with regard to increased leanness of pigs given porcine somatotropin. However, that progress has been made in the absence of much basic information about how animals divide nutrients towards protein and fat production. A greater understanding will aid the future progress, beyond somatotropin, toward customizing products for human needs and desires.

2) Our second research priority concerns the nutritional role and safety of animal foods for the American public. Human nutrition has become a much more important part of the process by which people plan their daily diets and their choices in what they eat. Although major degenerative diseases are multi-factorial, they have dietary components. Animal products need not be eliminated from the diet to meet current nutritional recommendations, despite what some persons say. Animal products, now and in the future, can meet nutritional requirements for protein, vitamin, and minerals, especially trace minerals, without impacting negatively on human health.

The major food safety problem is clearly from pathogenic microorganisms. Research to understand and ameliorate this problem will have a broad impact on tha public. Development of methods, particularly those from new biotechnological approaches, to detect and trace organisms can lead to an even safer food supply.

3) Our third priority concerns the use of biotechnology to enhance genetic progress. Genetic progress can improve animal performance, influencing the quality of animal products as well as safety. Engineering disease resistance into animals should yield great potential economic and health benefits for both animals and people. The ability to modify the genetics of the farm animals, as well as microorganisms which interact with them in both beneficial and detrimental ways, should ensure the future availability of animal protein for people. Much as a human genome project has potential to help with human disease problems, greater understanding of the genome of farm animals will aid in making progress in this regard.

4) Our fourth priority concerns physiological functions related to reproduction, fetal development,and behavior. The nervous system in animals impacts upon the animal's performance and behavior in ways which are not understood. It will remain difficult to capitalize on some biotechnology techniques until we have a deeper understanding of normal development or behavior. A greater understanding of behavior would also allow us to better answer questions relating to animal welfare, an issue of much concern to both Congress and the general public. Current understanding of behavior and indicators of well being do not always allow us to refute or support certain claims about animal well being.

Animal production is an integral part of sustainable agriculture that is vital to the competitive position of US agriculture in the world. A strong animal industry is strategic to nutrition and health of people. Past research findings have paid big dividends and have provided breakthroughs and specialized knowledge concerning new production techniques and products.

We are quite aware that some persons question the need for animal products in our diet. There is a "vegan" movement which declares that animal products are not needed for leather or other by-products, or for food. They state that all animals should be turned free. From their viewpoint, all of us should live on a vegetarian diet. According to "Designing Foods", a report from the National Academy of Sciences, animal products are the major contributor of protein and many B vitamins and minerals to the human diet.

Some say that we are consuming more protein than needed. It is better that we have some excess than large deficiencies. Vitamin B-12 is not available in plant foods and some minerals like iron and zinc, are more bioavailable in animal products. It is apparent that some persons choose not to include animal products in their diet. For most Americans, though, animal products taste good, they have a good texture, and they are enjoyable to consume. If animal products are to remain an important and economic component of the public diet, then research to improve them at more affordable cost is justified.

If the world population reaches 10 billion in approximately 2025 compared to our current 5 billion, animal products will be a necessity for many of those people. We think it is important, at this point, to continue to make improvements in animal products for this country as well as for other countries in the world. Other countries in the world have cheaper land resources, as well as lower cost of labor and capital. We could lose our lead in animal agriculture productivity to other countries if we do not stay ahead in the development and application of new technology. Animals also convert natural resources, such as range, forage, and food processing by-products into food for human consumption. Such resources would be completely wasted or would represent disposal challenges without animal agriculture.

The National Academy of Sciences recently issued a report entitled "Investing in Research: A Proposal To Strengthen the Agricultural, Food, and Environmental System". We support their recommendation of $500 million in competitive grants. As a member of CARAFE (Coalition for the Advancement of Research for Agriculture, Food, and the Environment), we are supportive of their proposals to date. We recognize that this is a era of huge deficits with significant need for funds for many programs. Yet, agricultural research has been underfunded for so many years, we feel that it is an appropriate time to seriously consider the issue of level of funding.

In contrast to other departments, the USDA currently provides less than 5 percent of its research support in terms of competitive grants. In addition, the dollar level is markedly lower than most other agencies. The $500 million competitive grants would raise the proportion of competitive grants for agriculture to less than 40 percent in contrast to biomedical research where more than 80 percent is typically in competitive grants. This new initiative should not be achieved at the expense of formula funds or Agricultural Research Service funds. Even these are much less in magnitude than that for defense, biomedical research, and energy. Therefore, our membership concluded that it is essential that the competitive grants program be expanded with new money.

We do not have an alternative figure to that in the NRC report as we feel that the $500 million is totally justified by the importance of agriculture, the current funding situation, and the need to increase the competitive grant component of USDA budget. Should not access to an economical, safe, and healthful diet produced with attention to preservation of our resources be worthy of greater commitment from our elected leaders? We recognize that it is the job of Congress to make hard decisions and we recognize the difficulty you are faced with in doing so. We feel you need not be apologetic to support a magnitude of this increase at a time of tough financial times. Certainly the feeding of the American public has broad implications in health, welfare, competitiveness, and even defense. "An army travels on its stomach."

When considering these questions, you might consider the following issues:

Compare agricultural research to improve the food supply to such large projects as Strategic Defense Initiative (SDI), the Superconducting Supercollider (SSC), the NASA Space Station, and other such projects requiring massive expenditures for science. We recognize that the "peace dividend" has been presumed by many groups to have potential for funding many other projects. We know that you must balance various needs, but please ask yourselves as to why past funding has been so inadequate and support an increased share for funding this very necessary agricultural research initiative.

Thank you for this opportunity to present testimony on this very important issue. If we can address more specific questions or provide added information, please contact:

Robert G. Zimbelman
Executive Vice President
American Society of Animal Science
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STATEMENT OF THE FOOD AND AGRICULTURAL POLICY RESEARCH INSTITUTE

The Food and Agricultural Policy Research Institute, jointly sponsored by the University of Missouri at Columbia and Iowa State University at Ames, Iowa, has developed a very sophisticated econometric model of U.S. and world agriculture. These models contain detailed specifications that incorporate government policies, linkage to world economies, international trade, and economic responses from the farm gate to the retail market. This farm policy research institute makes it possible to evaluate the consequences of alternative government program options in the farm economy.

A central evaluation theme has been the necessity of farm programs in achieving a balance between inter-dependent players including consumers, producers, international trade, input industry, processing industries, conservation and total government expenditures. Programs that focus on one area at the expense of some related sector are generally subject to further scrutiny and revision. Therefore, a significant contribution of the FAPRI policy research laboratory is to identify possible directions and consequences as program options are being considered in the political environment. In this process, FAPRI research has helped elevate farm policy and program debate to a higher level than would have been possible without detailed evaluation and distribution to policy leaders.

A majority of the options evaluated in the past have been in direct response to requests by congressmen and staff associated with agricultural committees in Washington, D.C. These requests have ranged from options containing little or no government in agriculture to strategies that would place agriculture in a strong supply control situation with mandated parity prices.

The current fast track of the Food Security Act of 1985 towards market signals with lower levels of government involvement continues to dominate as a program option. Therefore, debate around this issue will be of significant importance in shaping the 1990 farm legislation. Research conducted by FAPRI during 1989 and early 1990 has already helped clarify dimensions of this delicate balance of government and market forces.

As these impacts are evaluated, estimated results are disseminated to a wide audience ranging from U.S. Congress and congressional staffers, to major farm organizations, commodity organizations, state governors, academia and industry. In each case, strength and potential areas of concern will be identified relative to the objectives of farm program options.

The number of requests, plus the international scope of this project, warrants further support for ensuring that training and research continues as a backup for public policy debate on U.S. and world agriculture.

Farm Bill Options and Baseline Analysis Currently Under Evaluation

- 10 year FAPRI Baseline - continuation of the FSA 85 with frozen target prices.
- Flexibility Program

  Option A - program designed to allow farmers greater flexibility in planting decisions, but with continued government support on alternative crops on program base.

  Option B - Option A, except that target prices are lowered 4%.
- Equilibration Program

  Option A - program designed to evaluate the consequences of providing higher levels of government support for minor feedgrains and soybeans.

  Option B - Option A, except ARP rates are increased 2.5%, and the soybean loan rate is reduced.

  Option C - Option A, except target prices and soybean marketing loan rates are reduced by 1%.
- Soybean Marketing Loan - program designed to provide higher levels of government support to the soybean industry.

  Options under evaluation include: $5.25 marketing loan
  5.50 marketing loan
  5.75 marketing loan
  6.00 marketing loan
- Soybean Marketing Loan - price support associated with $500 million in government costs.
- Modified Flexibility Program

  Option A - program designed to allow farmers greater flexibility in planting decisions, but without government support on alternative crops on program base.

  Option B - flexibility program plus $5.50 marketing loan on soybeans, designed to give flexibility but with government support at the $5.50 marketing loan level for soybeans.

  Option C - Option B, except with higher export path for soybeans and products.

  Option D - Option B, with drought scenario in 1991 & '92, duplicating weather of 1988 & '89.

GEORGIA AGRICULTURAL COMMODITY COMMISSION FOR PEANUTS

STATEMENT OF JIMMY BLITCH, CHAIRMAN

SUMMARY

An increase of $1 million for appropriations in Agricultural Research Service (ARS) USDA funding for peanuts divided across the three ARS locations in Tifton, Georgia; Suffolk, Virginia; and Raleigh, North Carolina is requested. This is essential if peanuts are to remain a significant crop in the Southeast and coastal plain states. Increased ARS funding will permit rapid expansion of current federal/state research efforts into a wholely integrated, multi-disciplinary team focus on the major factors affecting market quality and cost efficiency of production.

Mr. Chairman, members of the Subcommittee on Agriculture, Rural Development, and Related Agencies, I am James M. Blitch, member of the Georgia Peanut Commission Executive Board from District III and serve as the Commission's Research Committee Chairman.

We have a potentially serious problem in Georgia and the United States. We know that new peanut varieties with high yield and desirable market quality are essential if Georgia and U.S. producers are to continue to be competitive in the domestic and expanding export markets. The yields of the runner type peanut, which is predominantly grown in Georgia and other varieties grown in Georgia and the U.S. have plateaued and began a down-turn over the last decade.

Comparing the 6-year period 1979-84, omitting the 1980 drought year as an aberration, to the five year period from 1985-89 you will see U.S. yields have decreased 6 percent. In Georgia this is even more dramatic. During this same period we see that Georgia's yields have decreased 14 percent during the last half of the decade averaged against the first half of the decade.

While the average U.S. yield between 1985-89 was really stagnant at 1.8 percent higher than the average U.S. 1973-77 yield, we note that Georgia's yield during this period decreased nearly 10 percent. It is disturbing for us to realize that we are 10 percent less in yield during the last 5 years than during the 5 year period after the florunner variety was widely introduced to the growers two decades ago.

Though high in crop value, peanut acreage in the U.S. is not sufficiently large to attract the attention of private seed companies. Development of new varieties and improved genetic lines emerge almost solely from the public sector. Agriculture Research Service (ARS) funding for peanut research at Tifton, Suffolk, and Raleigh has remained constant for almost two decades. These programs, like other ARS programs, suffer from increased costs in salaries, supplies, and equipment. Thus, it has not been possible to add the needed expertise at these locations and in most instances, it has been necessary to reduce the scientific staff.

Georgia alone accounts for nearly 50 percent of the peanut production in the United States with recent plannings averaging nearly 700,000 acres, primarily of the Runner type. Annual peanut production in Georgia, in gross value to the growers, is approximately $500 million. If you include the shelling, storage and blanching operations and conversion to peanut butter, snack and confectionery items, in addition to all the allied industry supporting both the farming operations and further processing operations, peanuts contribute to Georgia's domestic economy over $2 billion.

In addition to the loss of peanut yield and value, our problems are compounded by the loss of growth regulators and pesticide chemicals because of food safety issues, which has created an urgent need for varieties with greater disease and nematode resistance in altered plant growth habits. We also know that lack of desired flavor development and a means to eliminate freeze damage kernels and seed coat discoloration are major quality factors threatening domestic and limiting export markets. We know that present and developing markets and expanding U.S. export markets in Europe, Canada, and Japan are all quality orientated. China, Argentina and Malawi stand ready to exploit U.S. development if supplier quality is limited.

We have the need for critical data inputs in order to develop expert management systems that minimize costs and optimize yield and quality in production, harvesting and storage. We have need of essential knowledge on current flavor characteristics, their development during maturation and rapid means to screen during variety development in order to produce new varieties that meet quality requirements for roast flavor as well as those for size and texture. Advanced technology for sorting and eliminating damaged/improperly handled in-shell and shelled peanuts are essential to meet quality and safety demands of the marketplace.

Tremendous tools have been developed with new developments in biotechnology and molecular technology available to the biological sciences. We do not even have the capability to implement this new technology for assaying and identifying important agronomic traits at the molecular level in order to develop new high yielding varieties. Without additional funding, this new technology cannot be used unless we transfer funding from existing disciplines that have already extremely limited funds.

An increase of $1 million for appropriations in Agricultural Research Service (ARS) USDA funding for peanuts divided across the three ARS locations in Tifton, Suffolk, and Raleigh is requested. This is essential if peanuts are to remain a significant crop in the Southeast and coastal plain states. Increased ARS funding will permit rapid expansion of current federal/state research efforts into a wholely integrated, multidisciplinary team focus on the major factors affecting market quality and cost efficiency of production.

Thank you for allowing me to present this statement. We stand ready to supply any documentation or information that you might need. If you have any questions, do not hesitate to call upon us.

HEALTH INDUSTRY MANUFACTURERS ASSOCIATION

STATEMENT OF ALAN H. MAGAZINE, PRESIDENT

The Health Industry Manufacturers Association (HIMA) supports an appropriation for the Food and Drug Administration (FDA) for FY 1991 of $730 million without the imposition of user fees.

The number of applications for new medical products is increasing faster than the ability of the agency to keep pace at present budget levels. Review times are trending up. Slow product review has two important consequences:

1) patients are deprived of new technologies that improve the quality of life and, in many instances, save lives;

2) slow product review can act as a drag on the competitiveness of our industry and the economic health and well-being of our nation.

The medical products industry enjoys a positive balance of trade, and it has been steadily growing. But the strong performance of the medical products industry, and its competitiveness in world markets, is dependent upon a regulatory environment where companies can introduce innovations rapidly. Increased resources are called for if the FDA is to keep pace in this environment. But these resources should come from additional public funding, not from user fees.

- The FDA has a mandate to protect the public health, and it should be funded from the public treasury;
- User fees on a regulated industry raise the potential of an apparent conflict of interest;
- User fees are taxes on innovation and competitiveness;
- User fees would place a disproportionate burden on smaller companies that are among the most innovative;
- User fees are being proposed as a substitute for appropriations and would add little to FDA in the way of additional resources.

Thank you for this opportunity to express our views.

Mr. Chairman and members of the Subcommittee:

My name is Alan H. Magazine. I am President of the Health Industry Manufacturers Association (HIMA). HIMA is a trade association that represents more than 330 companies that manufacture medical devices, diagnostic products and health information systems. Two-thirds of the member companies are smaller businesses with annual domestic sales of less than $20 million.

This will be the fifth year that HIMA has had the privilege of testifying in behalf of increased funding for the FDA. We want to thank the subcommittee for its past support. Because of your help, the agency has made progress in meeting its increasing responsibilities in protecting the public health. But the progress has been hard won and incremental.

In the important area of reviewing pre-market applications for medical devices, the agency appears to be treading water rather than sprinting forward. In FY 1989, the review times for pre-market approval applications (the most stringent form of FDA review) dropped to an average of 247 days, a significant improvement over the previous year's average of 270 days. However, 26 additional pre-market approval applications are expected to be submitted to the agency during the present fiscal year--or a total of 110--and the same number of applications is anticipated for FY 1991. Accordingly, review times are expected to increase by 23 days--effectively wiping out the previous gains. The point is that in almost every category of review, the number of applications is increasing faster than the ability of the agency to keep pace, and certainly faster than its ability to continue to make improvements in reducing review times.

Some of you on the committee may be asking yourselves what difference a few days or even a few months makes in approval times. In the first place, you must understand that these are averages. Some products, contact lens solutions, for instance, generally win approval very rapidly. But many other products--especially those on the cutting edge of science and medical advancement--wait much, much longer, some as long as several years.

These delays affect health care by depriving patients of state-of-the-art medical technology. Patients need medical products that are safe and effective, but they also have a right to timely access to medical innovations. I believe that it is unacceptable to the American people--and I hope it is unacceptable to this subcommittee--that patients have to endure long waits for the fruits of medical research because the government simply does not have adequate personnel to review applications.

In addition to its impact on patient care, slow product review can act as a drag on the competitiveness of our industry and the economic health and well-being of our nation. One reason that FDA is having a difficult time keeping up with new product review is because of the tremendous pace of innovation in medical technology. The U.S. Industrial Outlook for 1990 predicts that medical products and other high-tech industries will dominate growth in U.S. manufacturing and service industries in 1990. The Department of Commerce estimates that medical products exports increased by approximately 15% in 1989, with the U.S. trade surplus in these products increasing more than 100%, to $1.7 billion. We are a healthy industry, contributing to the health of our people and our nation.

But the strong performance of the medical products industry, and its competitiveness in world markets, is dependent upon a regulatory environment where companies can continue to innovate and introduce these innovations rapidly. Any substantial change in the U.S. regulatory environment (such as a slowdown in product review times) could significantly alter the growth projections for 1990 and for future years.

Let me just give you one example. Many of our companies are involved in the development of so-called combination/hybrid devices. A hybrid device is a product that contains components of both a drug and a device. I believe that this extremely innovative technology is clearly the wave of the future. The FDA is experiencing difficulty in devising a regulatory scheme that will deal with such products efficiently and effectively without a lot of duplication or inconsistency in requirements. Meanwhile, many such devices gather dust at the FDA while our competitors in Japan and Western Europe beat us to the world market. Although it is not the responsibility of the FDA to promote U.S. industry, its actions--or inactions--should not impede U.S. competitiveness. FDA needs to make a regulatory system for hybrid devices a priority and to devote sufficient resources to this goal. This is not an issue of safety or effectiveness; it is an issue of priority and funding.

I believe it would be appropriate at this point to say a few words on the subject of user fees. User fees on the product review process are really taxes on competitiveness and innovation. Their effect would be to weaken the industry's position as the world leader in medical technology.

It is the smaller, entrepreneurial companies in our industry that do the most innovating. Many of these start-up firms export their innovative products all over the world. But these smaller companies tend to operate on tight budgets. Almost all of their resources are devoted to research and development--and to the lengthy clinical trials that are required before an application is even submitted to FDA. Then, they are subject to months and sometimes years of scrutiny by the agency before they can introduce their product and recoup some of their investment. An additional fee estimated at close to $100,000.00 per pre-market approval application--before the first product can be sold--could tip the balance in favor of a decision not to develop the new product. That kind of disincentive could have a very negative impact on innovation in this industry.

Moreover, user fees raise troubling questions about the possible conflict of interest involved when a public, regulatory agency derives substantial funds from the private sector that it regulates. We believe that it would be in the interest of good government to avoid such conflicts of interest---or apparent conflicts of interest--by supporting the agency out of appropriated funds.

The Administration's proposal for an "increase" in funding for the FDA is built on a fiction--a non-existent user fee on various types of product review activities. Without user fees (which have never been considered for the FDA by the Congress), the Administration's request amounts to a serious reduction in resources for the FDA.

This comes at a time when there is a growing recognition by everyone (except the Administration, apparently) that FDA needs more, not less, help in fulfilling its mandate. The need for automation and state-of-the-art equipment, the need to attract and retain qualified scientific personnel, the need for adequate facilities--all of these are well documented requirements that cry out for increased funding. The FDA Council, an organization of companies and associations concerned about the FDA, is recommending an appropriation of $730 million, without the imposition of user fees. HIMA supports this funding level.

We are well aware of the severe budget constraints under which the subcommittee is operating, and we realize how difficult it will be to fund such a significant increase. Nonetheless, we believe that the increase is justified. Such an increase, however, ought to be coupled with a corresponding commitment from the agency to continue a process of critical self-evaluation and to devise management programs that will increase efficiency and maximize the use of this additional funding so that real gains are made.

We thank you again for this opportunity to express our views.

HUDSON RIVER FILM AND VIDEO

STATEMENT OF JULIE MOTZ, EXECUTIVE PRODUCER

SUMMARY OF TESTIMONY

The Hudson River Film and Video Company is requesting that an appropriation of $600,000 be made in the FY 1991 budget of the Assistant Secretary for Science and Education of the United States Department of Agriculture for the production of a documentary film for national public television about the education and rehabilitation of drug addicted, criminal and delinquent youth.

FARMING AMERICA

Mr. Chairman and members of the Committee, I am Julie Motz, Executive Producer for the Hudson River Film and Video Company, and I am very pleased to have the opportunity to submit testimony to this committee once more.

For the past two years I have appeared before you to request an appropriation for two public television documentaries about American agriculture. I am happy to report that, thanks to the wisdom of this committee, the first of these - entitled **FARMING AMERICA** - is now being completed. Colleen Dewhurst has recorded the narration we will be able to have a preview of the program for the Committee in the beginning of June, when cassettes of the finished film will also be available for Committee members in June.

The second film will be completed this coming fall. We have had preliminary discussions with PBS about air time, and they have told us that they would like to present both programs to the American public this year. We hope that this will both stimulate public interest in the discussion surrounding the 1990 Farm Bill and sensitize both rural and urban Americans to the critical importance of farmers and the farm economy in all our lives.

As we travelled around the country looking at American agriculture, and devising ways to document it, in all its overwhelming richness, stunning variety, and staggering complexity, we were both heartened and saddened. We were heartened by the people we met - people of tremendous faith, good will and resourcefulness. It was encouraging to realize that those upon whom we as a nation depend for that food which is our very life were so committed to their lives and to their way of life.

It was saddening to realize we are headed in a direction where there are fewer and fewer of those people, and that their lives, which are so precious to our own survival, are becoming more and more difficult. Our feelings of hope did, however, ultimately triumph. Our research and our travels convinced us that the human and natural resources which have fueled the successes of American agriculture in the past have not been hopelessly squandered, and that there is both the will and the intelligence on the part of the American farmer to be a wise keeper of the land and a bountiful provider of food and clothing to America and the world.

YOUTH AT RISK

In addition to the problems of the farmer, there were other problems which intruded upon our consciousness as we journeyed across the continent. These were the problems of our nation's youth - as desperate in rural areas as in urban centers, and a constant theme on the evening news. It became ever more clear to us that no corner of America was safe from the scourge of drugs, and the crime, despair and destruction of our young people which drug-taking invariably engenders and accompanies.

We decided when our filming was completed last fall that our next film project would have to address this issue - that it was simply too important for us to ignore. We began to ask ourselves not, "why do so many young people take drugs and commit crimes?," but rather "why don't we?" What is it about our lives that makes those options unacceptable to us?

While we might certainly like to imagine that it is our superior moral fibre and our high ethical standards that account for this difference, the truth is that we had to admit that we all had criminal and even murderous impulses at times and, at times, a strong desire to escape from reality. We decided that what kept us from both drugs and criminal activity was not the fact that we were so very "good," but the fact that we had so many other choices in our lives.

As members of the educated middle class, we had been able to learn to use our minds to both distract ourselves from painful realities in socially acceptable ways (literature, music, art and conversation) and to create the kind of reality we preferred. We used our minds to get us the kind of work we wanted, and to do that work in an efficient and enjoyable way. It became clear to us, the more we thought about it, that we were not born with these abilities - we were carefully taught them by our parents and our schools.

We then began to ask, what would we, as a society, have to give those desperate young people, to make them feel as glad to be alive and part of life in America today as we are? What would truly give them the mobility that we accept as our birthright

- the freedom to work at something meaningful to themselves and valued by others? What is the true passport into socially productive life in this country? And what are the consequences of not supplying that to them?

The answer to the last of these questions is, unfortunately, all too apparent and all around us. Our prisons and juvenile detention centers are exploding, and more cannot be built quickly enough, especially with current recidivism rates, to hold all who could be legally sent there. Our streets are no safer, our lives and our property no more secure, and our young people no less frightened and frightening, both to themselves and others.

We suspect, both from our own experience and the reading and interviewing we have done, that the answer to the first two questions is "a first-rate education." Traditionally, education has been the great inclusionary and democratizing force in this country. It has turned millions of immigrants into Americans, and swept millions of people up from the struggle and despair of poverty into the hope and freedom of the middle class. It is probably the reason that America has had so large a middle class, and so little hierarchy and restrictiveness in its social structures.

What would happen if some of the top educational institutions in this country - led by our land grant universities - became deeply involved in the education of our troubled, drug-addicted and criminal youth? Given that the recidivism rate among those who get their bachelor's degrees while incarcerated is 2% (compared with an overall average of 80%), what would happen if America's finest institutions of higher learning devoted their resources to reaching and reclaiming this population? What would happen if we could create prisons that would actually function as universities?

I am here to ask for an appropriation of $600,000 that would enable us to initiate a two-part documentary series for national public television that would explore these questions, and open the minds of the American public to a creative examination of the plight of our isolated and disaffected young people. Given the mandate of the Extension Service to promote youth development, and the excellent outreach work already being done by both 4-H and Extension in this area, it seems a most appropriate project to be executed under their aegis.

Extension already has an excellent history of reaching beyond its traditional rural constituency with such programs as Urban Gardening and food and nutrition education in our inner cities. With programs such as Tackling Tough Stuff, they are working with land grant university faculties to turn around the most negative trends in adolescent thought and action. Our films will look at the whole history of the education and rehabilitation of substance-addicted and criminal youth, and explore the concept of making education, administered by our best institutions of higher learning, the primary focus of all treatment and incarceration.

We all know that the youth of this country are its future and that, if current trends continue, that future is decidedly grim. They are a resource as precious as our land, our water and the air we breathe. Just as we have as a nation slowly and painfully come to the realization that the environment must be saved - and that we can do it - so we must also come to realize that saving these young lives is both necessary and within our grasp.

Just as we have come periously close to wasting the bounty of this land and the people who nurture that bounty which is the true basis of all our wealth, so we are coming close to losing an entire generation of future citizens to drugs and crime. Time is running out, but it is still not too late to turn the most creative resources we have to recapturing their hearts and stimulating and educating their minds. I hope that the Committee will allow us the opportunity to start moving the American public towards a realization of this.

In closing, I would like to thank you all again for your support for our work, and for the tremendous amount of information which you and your staffs have made available to us. The American farmer is very lucky to have such uniquely dedicated and wonderfully creative people working on his behalf, and we are all lucky to have you safeguarding the interests of the nation and of all its people.

HUMANE SOCIETY OF THE UNITED STATES

STATEMENT OF DR. MARTIN L. STEPHENS, DIRECTOR, LABORATORY ANIMALS DEPARTMENT

The Humane Society of the United States (HSUS), the nation's largest animal protection organization, on behalf of more than one million members and constituents, is proud to submit this testimony on FY 1991 appropriations for the U.S. Department of Agriculture to enforce the Animal Welfare Act (AWA).

The HSUS has joined other animal-protection and scientific organizations in urging this Subcommittee to appropriate $12 million to the USDA's Animal and Plant Health Inspection Service (APHIS) for enforcement of the AWA. We believe this $3.3 million increase over the President's FY 1991 budget plan would enable APHIS to better inspect the more than 9,000 registered research sites, animal dealers, exhibitors, and intermediate handlers and carriers covered by the AWA. The HSUS attaches great importance to this appropriation.

The primary purpose of this testimony is to seek an additional $2 million appropriation to help APHIS comply with a twenty year old congressional mandate. In 1970, Congress amended the AWA to expand coverage from dogs, cats, primates, guinea pigs, hamsters, and rabbits to include all mammals and birds used in experimentation and other regulated activities. The USDA has yet to implement this change. They say that budgetary limitations have prevented them from carrying out this congressional mandate.

On November 15, 1989, The HSUS and the Animal Legal Defense Fund filed a petition with the USDA requesting the agency to comply with the law. The petition, a copy of which is attached, focuses on two sets of species: (1) birds and laboratory-bred mice and rats, species which have been specifically excluded from the USDA's own definition of "animal"; and (2) horses and other farm animals, which have not been specifically excluded from USDA's definition of "animal" when used in regulated activities, but for which the USDA has not issued humane standards and regulations.

APHIS officials have indicated to us that they are supportive of the requested change, at least with respect to farm animals, rats, and mice. Indeed, we understand that APHIS will shortly publish a notice of intent to institute regulations on farm animals used in biomedical research and other covered activities. Nevertheless, our understanding from communications with APHIS is that funding is the main obstacle to extending coverage to mice and rats, and perhaps birds as well. We are prepared to press the USDA to reallocate funds from outside its budget for AWA enforcement, if necessary to make the requested change. However, Congress may wish to make a special appropriation to help ensure that its twenty year old charge to the USDA is finally fulfilled.

In November, 1989, APHIS estimated that extending coverage to mice and rats would cost an additional $1.9 million in inspection expenses. Adding birds to the list would bring the total to about $2 million, the additional appropriation we are requesting.

The Animal Welfare Act is the American public's primary means of assurance that animals in laboratories receive at least limited protection. Yet, some 85% of the mammals and birds currently used in biomedical experimentation remain disenfranchised from the protections of the Act. From our conversations with officials at the USDA and the Public Health Service, as well as with other representatives of the research community, there appears to be widespread support for removing the arbitrary exclusion of birds, mice, rats, and farm animals from the protections of the Act. By appropriating funds specifically designated for this purpose, the Subcommittee can help facilitate this long overdue reform.

BEFORE THE U.S. DEPARTMENT OF AGRICULTURE

PETITION FOR RULEMAKING AND COLLATERAL RELIEF

I. INTRODUCTION

Pursuant to the Administrative Procedure Act, 5 U.S.C. § 553(e), The Humane Society of the United States and the Animal Legal Defense Fund, two national animal protection organizations, petition the Department of Agriculture to 1) institute rulemaking to specify that birds, and rats and mice bred for use in research, are species included in the definition of "animal" under the Animal Welfare Act, 7 U.S.C. § 2131 et seq., and applicable regulations, 7 C.F.R. 1.28, and 2) promulgate standards for the care of these species, as well as for horses and other farm animals used or intended for use in regulated activities.

II. NATURE OF PETITIONERS' INTERESTS

Petitioner, The Humane Society of the United States (The HSUS), is a non-profit, charitable corporation with principal offices in Washington, D.C., and regional offices throughout the United States. The HSUS represents a membership and mailing constituency of more than 1,000,000 persons nationwide. The primary goal of The HSUS is to promote humane care and treatment of all animals, including the at least 17-22 million animals used each year in American laboratories for experimentation, research, and testing.[1]

Petitoner HSUS played a major role in passage of the original Laboratory Animal Welfare Act of 1966 (Pub. L. 89-544; 80 Stat.

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[1] U.S. Congress, Office of Technology Assessment, Alternatives to Animal Use In Research, Testing, and Education (Washington, D.C., U.S. Government Printing Office, OTA-BA-273, February 1986).

350), and in passage of amendments in 1970 (Pub. L. 91-579; 84 Stat. 1560) (renamed the "Animal Welfare Act"), in 1976 (Pub.L. 94-279; 90 Stat. 417) and in 1985 (Pub.L. 99-198, Title 17 XVII, Subtitle F (secs 1751-1759), Dec. 23, 1985; 99 Stat. 1650). Since 1966, The HSUS has actively participated in the promulgation of regulations intended to implement the Act (9 C.F.R. 1-4) and has devoted large amounts of its budget and staff time to assisting and evaluating enforcement of this law.

Petitoner, the Animal Legal Defense Fund (ALDF), is a national non-profit charitable corporation of attorneys, law professors, law students and paralegals. ALDF has chapter offices in San Francisco, New York, Boston, Washington, D.C., Chicago, and Seattle. The organization's staff attorneys, the 13 board members, and chapter directors have concentrated on animal law for many years, with emphasis on four spheres of animal use: laboratory animals, wildlife, farm animals, and companion animals.

ALDF's purposes and activities include initiating and participating in federal and state legal actions and administrative rulemaking proceedings concerning the care and use of all animals, including farm, research and wild animals, and providing information and legal opinions to its members when there has been a violation of any rule or policy, or other acts, omissions, or neglect by federal and/or state governments or private individuals which cause or permits physical pain, behavioral distress, suffering, debilitation and/or death to animals. ALDF works to ensure that important governmental decisions affecting the lives and interests of animals are based on a rational analysis and made according to applicable law.

The Animal Legal Defense Fund has submitted extensive comments to USDA in response to USDA's proposed rulemakings under the Animal Welfare Act, 7 U.S.C. § 2131 _et seq_. In addition, since 1986, ALDF has devoted a large portion of its budget and staff time to evaluating USDA's administration of the Animal Welfare Act and the promulgation of regulations under the Improved Standards for Laboratory Animals Act, 7 U.S.C. § 2131, _et seq_.

III. STATEMENT OF THE PROBLEM

CURRENT REGULATIONS AND GUIDELINES EXCLUDE "BIRDS, AND RATS OF THE GENUS _RATTUS_ AND MICE OF THE GENUS _MUS_ BRED FOR USE IN RESEARCH," FROM THE DEFINITION OF "ANIMAL" AND, THEREFORE, NO STANDARDS EXIST FOR THE PROTECTION OF THESE SPECIES UNDER THE ANIMAL WELFARE ACT. FURTHERMORE, ALTHOUGH HORSES AND OTHER FARM ANIMALS BEING USED OR INTENDED FOR USE IN BIOMEDICAL RESEARCH ARE NOT EXCLUDED FROM THE DEFINITION OF "ANIMAL", USDA HAS FAILED TO PROMULGATE STANDARDS FOR THESE SPECIES UNDER THE ACT.

The Animal Welfare Act is the only federal statute designed to protect animals used in all research facilities. Under this law, research facilities are required to register with the U.S. Department of Agriculture (USDA) and to meet minimum standards of housing, care, and treatment for warm-blooded animals. The Act is administered by the Animal and Plant Health Inspection Service (APHIS), an agency of the USDA.

The Animal Welfare Act established by law:

> the humane ethic that animals should be accorded the basic creature comforts of adequate housing, ample food and water, reasonable handling, decent sanitation, sufficient ventilation, shelter from extreme weather and temperature, and adequate veterinary care, including the appropriate use of pain-killing drugs.[2]

The Animal Welfare Act defines "animal" as follows:

> any live or dead dog, cat, monkey (non-human primate mammal), guinea pig, hamster, rabbit, _or such other warm-blooded animal, as the Secretary may determine is being used, or is intended for use, for research, testing, experimentation, or exhibition purposes or as a pet_; but such term excludes horses not used for research purposes and other farm animals, such as, but not limited to livestock or poultry, used as food or fiber, or livestock or poultry, used or intended for improving animal nutrition, breeding, management, or production efficiency, or for improving the quality of food or fiber. With respect to a dog, the term means all dogs, including those used for hunting, security, or breeding purposes.

7 U.S.C. § 2132(g) (emphasis added).

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[2] H.R. Rep. No. 91-1651, 91st Con., reprinted in (1970) U.S. Code, Cong. & Ad News 5103, 5104.

Despite the Act's definition of "animal," the Secretary of Agriculture has promulgated regulations that exclude "birds, rats of the genus Rattus and mice from the genus Mus bred for use in research," from the definition of "animal." 9 C.F.R., Part 1. While the Act does provide for exclusions to the definition of "animal," birds and rats and mice bred for research are not the animals that Congress dictated that USDA should exclude.[3] Therefore, by excluding "birds, rats of the genus Rattus and mice of the genus Mus bred for use in research" by regulation, USDA violates the Act's definition of "animal."

Because birds and rats and mice bred for research are excluded from the Act's definition of "animal," the USDA has not promulgated standards for the protection of these species under the Act. The USDA also has not promulgated Animal Welfare Act standards for the protection of horses and other farm animals used for biomedical research, despite the fact that these animals are not excluded from the definition of "animal" in the Act itself nor the USDA's regulations.

The Act's definition of "animal" does provide for certain exclusions of horses and other farm animals. These exclusions are "horses not used for research purposes and other farm animals, such as, but not limited to livestock, poultry, used as food or fiber, or livestock or poultry, used or intended for improving animal nutrition, breeding, management, or production efficiency, or for improving the quality of food or fiber." Therefore, when horses and other farm animals are used for biomedical research, testing or experimentation, they are included in the Acts's definition of "animal" and therefore should be protected by the Act.

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[3] The exclusions allowed by the Animal Welfare Act are: horses not used for research purposes and other farm animals, such as, but not limited to livestock or poultry, used or intended for use as food or fiber, or livestock or poultry used or intended for improving animal nutrition, breeding, or management or production efficiency, or for improving the quality of food or fiber.

The Secretary's exclusion of horses and other farm animals, as well as birds and rats and mice bred for research, from the protection of the Act removes from the Act's protection some 85% of all warm-blooded animals used in research.[4] These exclusions, therefore, vitiate the purpose and intent of the Act to provide humane care for all warm-blooded animals being used "for research, testing, experimentation, or as a pet."

IV. PETITIONERS' REQUEST FOR RULEMAKING

Petitioners request that USDA promulgate regulations that would change the definition of "animal" to that contained in the statute. Accordingly, petitioners request that the regulations read,

> The term "animal" means any live or dead dog, cat, monkey (nonhuman primate mammal), guinea pig, hamster, rabbit, or such other warm-blooded animal, as the Secretary may determine is being used, or is intended for use, for research, testing, experimentation, or exhibition purposes or as a pet; but such term excludes horses not used for research purposes and other farm animals, such as but not limited to livestock or poultry, used or intended for use as food or fiber, or livestock or poultry used or intended for improving animal nutrition, breeding, management or production efficiency, or for improving the quality of food or fiber. With respect to a dog the term means all dogs including those used for hunting, security, or breeding purposes.

Secondly, petitioners request that USDA promulgate regulations and standards for humane care of all species of animals that would, as a result of rulemaking, now be included in the definition of "animal."

V. THE REGULATORY CHANGE SOUGHT IS SUPPORTED BY THE CLEAR LANGUAGE OF THE STATUTE

In order to be valid, regulations must be consistent with the statute under which they are promulgated. United States v. Larionoff, 431 U.S. 864, 873 (1971). The starting point for interpreting a statute is the language of the statute itself and, absent a clearly expressed legislative intent to the contrary, that language must ordinarily be regarded as conclusive. Consumer Product Safety Commn. v. GTE Sylvania, Inc., 447 U.S. 102 (1980). When a court is called upon to construe a statute, its task is to interpret the words of the statute in light of purposes Congress sought to serve. Dickenson v. New Banner Institute, Inc., 460 U.S. 103 (1983).

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[4] U.S. Congress, Office of Technology Assessment, *op. cit*.

Furthermore, the D.C. Circuit has held that a "court's duty is to favor interpretation which would render statutory design effective in terms of policies behind its enactment and to avoid interpretation which would make such policies more difficult of fulfillment." Motor and Equipment Manufacturers Ass'n., Inc. v. E.P.A., 627 F.2d 1095, (D.C. Cir. 1979) cert. den., General Motors Corp. v. Costle, 446 U.S. 952 (1980).

The clear language of the Animal Welfare Act mandates coverage of warm-blooded animals used, or intended for use, for research, testing, experimentation or exhibition purposes and the promulgation of regulations to govern their humane handling and care.

The Secretary has been charged with the mandatory duty of promulgating "standards to govern the humane handling, care, treatment, and transportation of animals by dealers, research facilities, and exhibitors." The term "animal," as used in the Animal Welfare Act, is defined, by example, as a "dog, cat, monkey (nonhuman primate mammal), guinea pig, hamster and rabbit." That these species of animals are not the only ones to be covered by the Act is clear by the Act's additional language, "... or such other warm-blooded animal, as the Secretary may determine is being used, or is intended for use, for research, testing, experimentation, or exhibition purposes." By the clear language of the statute, if an animal is warm-blooded and the Secretary determines that the animal is being used, or is intended for use, for research, testing, experimentation or exhibition purposes, the Secretary is required to promulgate standards to govern humane handling, care, treatment and transportation by dealers, research facilities and exhibitors.

The Act specifies that the only discretion left to the Secretary is to determine whether such warm-blooded animals are being used for research. The Animal Welfare Act allows the Secretary no discretion to exclude a warm-blooded animal that is being used or intended for research from coverage of the Act.

In the narrative accompanying proposed rules for 9 C.F.R. Parts 1, 2, and 3 (54 Fed. Reg. 10822-10954) USDA admits to its lack of authority to exclude any warm-blooded research animals from the regulations. In response to comments requesting the exclusion of gerbils, the USDA responded:

> Gerbils became a regulated species when the 1970 amendments to the Act expanded the definition of "animal" to include "such other warm-blooded animal, as the Secretary may determine is being used, or is intended for use for research, testing, ... We do not have the authority to remove these animals from the coverage of the regulations. (emphasis added) (p. 10824)

In the same narrative, in response to comments requesting the inclusion of rats, mice, and birds, USDA stated: "We do have the authority to regulate these animals, though except for wild rats and mice, we have never covered them in our regulations" (p. 10823). By USDA's admission, the Act requires the coverage of gerbils. So does it require the coverage of birds, rats and mice bred for research, and horses and other farm animals used in biomedical research. The issue is not USDA's authority to cover birds, rats, and mice, and horses and other farm animals, but the agency's lack of authority to exclude these warm-blooded animals from coverage.

In the preamble accompanying final rules for 9 C.F.R. Part 1 (54 Fed. Reg. 36113), USDA states that it has the authority to regulate laboratory-bred rats and mice and farm animals used for biomedical research and testing, and that the agency is considering doing so. Petitioners laud the agency for its attention to these matters but we argue that such coverage for rats, mice, and farm animals is statutorily mandated, not a matter of USDA discretion. Furthermore, such coverage should also be extended to birds, for the same reason.

VI. THE REGULATORY CHANGE SOUGHT IS SUPPORTED BY THE LEGISLATIVE HISTORY OF THE ACT

The Secretary's decision to exclude laboratory-bred rats and mice from the definition of "animal" and from coverage of the Act may have been justified before 1970, but since the 1970 amendments to the Act, there is no such justification.

When the Animal Welfare Act was first passed in 1966, it defined "animal" as "live dog, cat, monkey (nonhuman primate mammal), guinea pig, hamster and rabbit." 80 Stat. 350, 351 (1966). In 1970, however, when the statute was amended, the phrase, "or such other warm-blooded animal, as the Secretary may determine is being used, or is intended for use, for research testing, experimentation or exhibition purposes..." was added. This language has remained through additional amendments of the Act in 1976 and 1985.

The House Committee on Agriculture report which accompanied the 1970 amendments explained that one of the purposes of the bill was to expand the term "animal" to include more species. "[T]his bill includes within its definition all warm-blooded animals designated by the Secretary with only limited and specifically defined exceptions." HOUSE COMM. ON AGRICULTURE, H.R. REP. No. 1651, 91st Cong., 2d Sess. 6, reprinted in 1970 U.S. CONG. & ADMIN. NEWS 5103, 5104. That USDA understood that its responsibilities would be extended under the Act is clear from the following passages of then Under Secretary of Agriculture J. Phil Campbell's June 9, 1970 letter to the Hon. W.R. Poage, Chairman, Committee on Agriculture, House of Representatives:

> The bill would amend Public Law 89-544, known as the Laboratory Animal Welfare Act, to extend the authority and responsibilities of this Department for regulating the transportation, purchase, sale, housing, care, handling, and treatment of any warm-blooded animal...
>
> The bill would greatly expand program operations under Public Law 89-544 by (1) including all warm-blooded animals under the Act;...
>
> If Federal regulation of laboratory animals is extended to all warm-blooded animals, we suggest it would be appropriate and consistent to extend the species of animals presently regulated under Public Law 89-544, to include all warm-blooded animals.

The Supreme Court has recognized that when "statements of individual legislators...are consistent with the statutory language and legislative history they provide evidence of Congress' intent." Brock v. Pierce County, 476 U.S. 253, 106 S.Ct. 1834 (1986).

That Congress intended the 1970 Amendments to broaden coverage of animals and specifically delineate which animals would be exempted is demonstrated by the comments of legislators during the House and Senate floor discussions:

> Rep. Thomas Foley (D - Washington), speaking on behalf of the House Agriculture Committee, remarked that "[t]his bill, within its definition includes all warm-blooded animals designated by the Secretary, with certain specific limitations and defined exceptions." 116 Cong. Rec. H40154 (Dec. 7, 1970) (emphasis added).
>
> As discussions on the floor of the House progressed, Rep. Catherine May (R - Washington), in urging her colleagues to approve the legislation, described the bill: "First, it expands the definition of the term 'animal' to include more species. The present law applies only to live dogs, cats, rabbits, hamsters, guinea pigs, and monkeys. All warm-blooded animals designated by the Secretary of Agriculture, with limited exceptions, would be included." 116 Cong. Rec. H40156 (Dec. 7, 1970) (emphasis added).
>
> Rep. Wiley Mayne (R - Iowa) agreed that the bill "expands the definition of covered animals to include all warm-blooded animals designated by the Secretary, rather than just live dogs, cats, rabbits, hamsters, guinea pigs, and monkeys." 116 Cong. Rec. H40158 (Dec. 7, 1970) (emphasis added).
>
> Rep. Wilmer Mizell's (R - North Carolina) remarks included the statement that: "[t]his bill includes provisions regulating the transportation, purchase, sale, housing, care, handling and treatment of warm-blooded animals used in research...[m]ore species of animals will be protected: all warm-blooded animals designated by the Secretary of Agriculture, with but a few specific

exceptions." 116 Cong. Rec. H40159 (Dec. 7, 1970) (emphasis added).

Rep. Robert Price (R - Texas) explained that the bill "extends the definition to include all warm-blooded animals designated by the Secretary of Agriculture, with certain specific limitations and defined exceptions." 116 Cong. Rec. H40159 (Dec. 7, 1970) (emphasis added).

VII. THE REGULATORY CHANGE SOUGHT WOULD FURTHER THE PURPOSE OF THE ACT

The General Accounting Office's report on the Department of Agriculture's Animal Welfare Program notes the discrepancy between the Act and the USDA regulations. With respect to the Act, the GAO writes:

> Provisions of the act apply to live or dead animals used or intended for use in research, testing, experiments, exhibition, or as a pet. The act applies to all dogs, including those used for hunting, security, and breeding purposes. The act excludes some animals such as horses not used for research purposes and other farm animals used or intended for use as food or fiber. (GAO-RCED-85-8, p.1)

In a footnote to this passage, GAO points out the discrepancy in the regulations: "USDA regulations (9.C.F.R. 1.1 (n)) also excludes birds, rats, and mice." (p.1)

The Congressional Research Service (CRS), Library of Congress, in "Two Questions Concerning the Animal Welfare Act" (Aug. 7, 1985) comments on the discrepancy more explicitly. The CRS report, in referring to the Secretry of Agriculture, concludes:

> Thus, the Secretary's exclusion of rats and mice in its regulation appears to be inconsistent with the language of the 1970 amendment to the Animal Welfare Act and with Congress's intent in enacting it. (p.4)

The Office of Technology Assessment, in Alternatives to Animals Used in Research, Testing, and Education states:

> the exclusion of rats and mice from the definition of 'animal' appears to frustrate the policy Congress sought to implement in 1970 and consequently to be beyond the Secretary's statutory authority. (p. 278).

These three objective, independent government agencies have found the exclusion of warm-blooded animals being used, or intended for use, for research, testing, experimentation, exhibition purposes or as a pet from the USDA regulations to be outside the Secretary's statutory authority under the Animal Welfare Act, a finding supported by the legislative history of the Act.

VIII. CONCLUSION

For the reasons set forth, Petitioners request that the USDA make the requested changes in its rules and administrative guidelines.

Respectfully submitted,

Martin L. Stephens, Ph.D.
Director/Laboratory Animals
The Humane Society of
the United States

Valerie J. Stanley, Esquire
The Animal Legal Defense Fund

INSTITUTE FOR ALTERNATIVE AGRICULTURE, INC.

STATEMENT OF DR. I. GARTH YOUNGBERG, EXECUTIVE DIRECTOR

MR. CHAIRMAN; MEMBERS OF THE SUBCOMMITTEE:

The Institute for Alternative Agriculture is grateful for the opportunity to present testimony on the need for increased funding for research and education in the area of lower-input, more sustainable farming systems. The Institute, which is governed by a 12-member Board of Directors that includes farmers, scientists, educators, and businessmen, has as its major objective the advancement of agricultural systems that are resource-conserving, environmentally-sound, and sustainable in the long term at the same time that they are economically profitable.

Specifically, we would like to urge increased funding in the FY 1991 budget for the USDA Low-Input Sustainable Agriculture (LISA) program, funding for expanded research in biological pest control, and renewed funding for the information services provided by the ATTRA (Appropriate Technology Transfer for Rural Areas) program. We believe that an allocation of funds to research and education for a more sustainable agriculture ought to be a first-level priority for the federal agricultural budget, even if such funds need to be redirected from other program areas. Let me address each of these program needs in turn.

The USDA LISA program, originally authorized by Subtitle C of Title 14 of the 1985 Food Security Act, has in its three years of work already added substantially to the production options available to American farmers. We have been so impressed with the results of the LISA projects that we have created a special report on the program published in our monthly newsletter, **Alternative Agriculture Resources Report**, that is mailed to county-level Extension agents across the nation. For example, with funding from the LISA program:

- Texas fruit specialists have found a way to significantly lower the use of chemical fungicides on strawberry plots by the use of clear plastic that allows solar rays to kill weed seeds, nematodes, and soil-borne diseases.

- Cornell University researchers showed that pheromone-treatment could successfully control the grape berry moth in New York vineyards.

- A six-state program in the Northwest has compiled information on low-input cereal/legume cropping and is getting that information out to growers.

- A three-state Midwestern project to organize "citizen groups of farmers" to do on-farm research and demonstrations is developing information on biological and cultural controls for alfalfa weevils, alternative methods of building soil fertility, and alternative crops.

- A Great Plains project is testing "living mulches" to combat soil erosion caused by conventional methods of leaving fields fallow over the hot summer months.

- A Northeast Farmers Network has been formed jointly by the Cooperative Extension in seven states, the Natural Organic Farmers Association, and the Maine Organic Farmers and Gardeners Association. In 1989, the group held a series of farm field days for farmers and Extension agents at which farmers using lower-chemical methods shared information. In 1990, a network of "master organic and sustainable farmers" will hold field days in each state.

These are only a small sample of the more than 75 productive and imaginative projects funded by LISA grants in 1988 and 1989.

In addition to the measurable results, the LISA program deserves high marks for fostering a new model for cooperative research that engages the creativity of farmers in solving their problems and building strong links between farmers, researchers, and extension workers. In project after project, federal extension and research personnel are linked with private non-profit groups and individual farmers in seeking solutions and building networks to share information. This obviously multiplies the effect of federal spending. It leaps over the traditional barriers to transfer of new research information from university stations, creating an enthusiastic support group for new ideas among leading farmers themselves.

Sociologists have long documented the importance of farmer leadership in the spread of new farm technologies. At its seventh annual national symposium held by the Institute here in Washington on March 6, 1990, multiple speakers called for building such cooperative systems for research and education. Active farmers can multiply many times over the extent of research in sustainable agriculture, keynote speaker Roland Bunch of World Neighbors said. Expanded support for the USDA LISA program is the simplest and most effective way to take this idea forward.

This year, the value of the LISA program has been recognized by the Administration, which in its FY 1991 budget proposal asks for $4.45 million in funding instead of recommending, as in previous years, that the program be eliminated. We would suggest, however, that farmers have an urgent need for sound research and information on ways to lower their use of farm chemicals while keeping their levels of productivity high. Continued funding of LISA at only $4.45 million is woefully inadequate in light of both its own track record and farmer needs.

As one sign of the need for LISA-type work, we cite the recent Iowa Geological Survey report which shows that one-third of Iowa's shallow water wells have nitrate levels exceeding national standards--likely a result of contamination by conventional use of nitrogen fertilizers. Upwards of 130,000 Iowans, about 18 percent of the rural population in that state, are drinking water with unacceptably high concentrations of nitrate. More than 94,000 rural Iowans are also drinking water that contains one or more pesticides, the report adds. In response to the reported levels of atrazine in Iowa water wells, the Iowa Secretary of Agriculture immediately called for restrictions on the use of that farm chemical.

It is concern over the loss of access to such farm chemicals along with concerns about degraded water quality and human health effects of using some farm chemicals that fuels the growing interest in alternative farming systems. If the Iowa Geological Survey is any indicator, that concern is likely to increase markedly in the next half-decade. Innovative programs such as the USDA LISA program can go a long way toward providing options for farmers who will need alternatives to present conventional systems.

In agreement with numerous other supporters of LISA, we would suggest FY 1991 funding at the level of $50 million for this program. In choosing that figure, we point to the fact that sound project proposals in each region of the country have been turned away by the regional committees allocating funding. To keep funding for projects already underway but needing long-term support, the Western region stopped soliciting new project proposals in 1990. This choice for a program with so much potential is a significant loss for agricultural producers in that region.

The expanded LISA program would be a regional, multidisciplinary competitive grants research, demonstration, and education program that focuses, as does the present LISA program, on more sustainable agricultural practices and systems. The objectives of this program, include enhanced productivity and profitability, conservation of natural resources, prevention of water quality degradation, promotion of crop diversification, protection of human, animal, and ecosystem health, and enhancement of wildlife habitat.

Of the suggested $50 million funding, we suggest that a significant portion of new funds be used to create a matching grant program that will build a federal-state partnership. A small amount of the total could be used to develop state-specific handbooks and field guides for Extension agents and farmers that incorporate information on such practices as rotations, nutrient management, and biological pest management.

Next, we would like to address briefly the special needs of research in biological pest control for sustainable farming systems. In 1988, the Institute sponsored a national symposium on biologically-based methods of pest control which documented the need for, and potential of, such approaches. (The papers from this symposium have since been published in Volume 3, Numbers 2 and 3, of the **American Journal of Alternative Agriculture.**) However, information from the U.S. Department of Agriculture (USDA) Current Research Information System (CRIS) indicates that the level of effort by the USDA and Land Grant Universities to develop non-chemical controls has significantly declined during the past two decades. For example, in Fiscal Year 1981, there were 535 scientist-years of effort. Concern about the needs for alternative methods of pest control was further heightened by the Board on Agriculture, National Academy of Sciences' report that identified 53 of the 600 agricultural chemicals as known or suspected oncogens. These include 19 insecticides, 17 herbicides, 14 fungicides, 1 bactericide, and 2 plant growth regulators. According to this report, residues of these compounds pose the greatest dietary cancer risk in the following commodities: Tomatoes, beef, potatoes, oranges, lettuce, apples, peaches, pork, wheat, soybeans, beans, carrots, chicken, corn, and grapes.

The U.S. Environmental Protection Agency has accelerated its review of a number of these chemicals, and it is anticipated that a number of them will be banned in the relatively near future. Unless alternatives are found, growers in the United States will have great difficulty in protecting fruit and vegetable crops from disease-causing fungi and insects.

Although the Administration's budget requests increased funds for water quality and food safety and for competitive grants in plant sciences, there is no reason to believe that funds from these sources will be allocated to a major thrust on alternative methods of pest control. Yet the need to discover and develop alternatives to chemical pesticides has never been greater. The time has come for the Agricultural Research Service (ARS) and the Land Grant Universities to accelerate their efforts to develop nonchemical controls. ARS should be directed to strengthen its efforts to find alternatives to protect fruits and vegetables from diseases and insects, and to pioneer biological approaches to control cropland weeds. Specifically, research on biological control of fungal diseases, on microbial agents for controlling insect pests of vegetables, on genetically altered insect viruses, and on microbial agents for control of weeds should be greatly accelerated. ARS is currently conducting relevant research at its Beltsville Agricultural Research Center and at a number of other locations. Also, a national technology transfer and information center dedicated to biologically based methods of pest control, operated jointly by ARS and a major university, is needed in order to facilitate the development and use of biological controls.

The appropriation of $5 million dollars to ARS is recommended in order to accelerate the lines of work discussed above. However, ARS should be directed to allocate a significant amount of these funds for extramural projects with universities in order to facilitate the development of strong joint programs. Examples of such joint programs are currently in place in Maryland between the Maryland Center for Agricultural Biotechnology and the Beltsville Agricultural Research Center and in California, where ARS and the University of California are jointly operating the Gene Expression Center.

Finally, we would like to comment on the importance of the Appropriate Technology Transfer for Rural Areas (ATTRA) national hot-line information service that is supported with federal funding and is now located in Fayetteville, Arkansas. This service has conscientiously provided timely and objective information and referrals on low-input, sustainable agriculture, to the Extension Service, farmers, farmer advisors, and others.

During the fall of 1989, I had the opportunity to participate in a formal 1½ day on-site review of this program. I was highly impressed with the quality and dedication of the entire staff, and with the timeliness and objectivity of the information being provided to a braod range of individual producers and agency personnel. I judged the program to be absolutely first-rate in every respect.

This Subcommittee may recall the dispute over location of this service that occurred in the course of the FY 1990 budget hearings, as a result of which funding for continuance of the ATTRA program is now allocated out of funds from the Interior Department, instead of Agriculture. We would like to suggest the importance of continued funding of this effort--recognizing the importance of this service to the agricultural community. Perhaps a joint funding effort would be appropriate. In any case, we urge an appropriation of $3 million.

In closing, we would like to thank the members of this Committee who have in the past three budget years supported funding for the LISA program, overcoming reluctance by the USDA Administration to continue that program. The outstanding results of your support are a sign of your good judgment. The signal sent by federal support of this program is already being reflected in decisions at the state level to create new sustainable agriculture programs, creating a ripple-effect from your action. The foundation world, led by deep concern about the sustainability of our food system, is now also weighing-in on the side of such research and education programs. Substantially increased funding in FY 1991 will multiply these positive effects even further.

Thank you for thoughtfully considering these matters. Your concern for the sustainability of American agriculture is noted and appreciated.

INTERNATIONAL APPLE INSTITUTE

STATEMENT OF DERL I. DERR, PRESIDENT

The International Apple Institute (IAI) is an Association serving and representing all segments of the apple industry. The Association's membership consists of 23 State/Regional Organizations of producers who grow approximately 90% of the U.S. apple crop and over 600 individual firms who handle and market the bulk of the nation's apples.

SUMMARY OF

The International Apple Institute's (IAI's) apple research add-on request and support of research programs in the USDA's 1991 budget.

PART I — ADD-ON REQUEST

The IAI proposes an increase of $6 million be added to the budget of the USDA Agricultural Research Service (ARS) for apple research to be implemented in $2 million annual increments over a consecutive three year period beginning with fiscal year 1991 and to be fully implemented at the $6 million level in fiscal year 1993 (See attachments A & B).

PART II — SUPPORT OF RESEARCH PROGRAMS IN THE USDA 1991 BUDGET

The IAI supports the research funding request contained in the USDA 1991 fiscal year budget proposal. The IAI specifically supports the $661.1 million program level of the Agricultural Research Service (ARS). The IAI also urges that the following two buildings and facilities provisions be retained:

- $10.1 million to construct a replacement laboratory for fruit research in Yakima, Washington and;
- the construction of a new Animal and Plant Health Inspection Service (APHIS) National Plant Quarantine Center at Beltsville, Maryland.

The IAI extends its budget support to include USDA's food safety initiatives most specifically a new funding of $25 million to provide for a multi-agency effort to collect and analyze residue data regarding actual exposure levels in the U.S. food supply. The IAI supports the USDA request that the first phase of the data collection program shall focus on fruit and vegetables. Additionally the USDA is urged to give high priority to Integrated Pest Management (IPM) and minor use pesticide programs and clearances in issuing special research grants within the Cooperative State Research Service (CSRS) program.

ATTACHMENT A

International Apple Institute (IAI) Apple Research Proposal

An initiative for a funding increase of $6,000,000 to be added to the budget of the USDA Agricultural Research Service (ARS) for apple research. It is requested the increased funding be implemented in $2,000,000 annual increments over a consecutive three year period beginning with fiscal year 1991 and to be fully implemented at the $6,000,000 level in fiscal year 1993. The phase-in provides for maximum efficiency in the start-up and subsequent continuation of needed new research projects.

The following allocation of funds according to research priorities is requested:

Priorities	Fiscal Year Funding Level 1991	1992	1993 and continued
Reduction of Pesticides	$1,000,000	$2,000,000	$3,000,000
Postharvest Technologies	1,000,000	1,500,000	2,000,000
Other	0	500,000	1,000,000
TOTAL	$2,000,000	$4,000,000	$6,000,000

The justification and discussion of priorities follow.

JUSTIFICATION -- Apples are a nutritious and healthy dietary basic. The consumer must receive fruit of predictable quality. Growers must be able to produce apples with a minimum of chemicals and cost. Fruit that will pack, store, and ship without decay or breakdown is much more capable of being marketed domestically or exported.

Research levels have diminished and apples have not received research attention commensurate with the size of the crop and its gross value. Add-on values developed in storing, packing, handling and shipping sustain considerable employment in rural areas.

Apples have several unique research needs and problems to be solved. Because research techniques suggest imminent "break throughs", an increase in the ARS budget to conduct research in the following priority areas would well serve the interests of the American public.

REDUCTION OF PESTICIDES - To conduct research that will result in lessening of use of pesticides in the growing, handling, storing and processing of apples. Currently, apple trees must be sprayed several times a year for a multitude of disease and insect pests.

In order to grow consumer acceptable apples, growers use various chemicals for control of disease, insects, weeds and other pests. Such controls can amount to 20% of cost of production. There is a desperate need to reduce use of chemicals while retaining fruit quality and reducing costs to growers.

Although some alternative control approaches are promising, there continue to be 35 or more diseases, insects and other pests that attack apples. Some very promising scientific discoveries show merit as techniques for combatting such pests and reducing use of persistent chemicals.

An example is the research involving distribution in the orchard of fibers saturated with sex pheromones (scent) which confuse males seeking females for mating, thus dramatically reducing reproduction of codling moth. Codling moth is the cause of worms in apples in all production areas of the U.S. Chemicals presently used to combat codling moth also destroy beneficial insects that help control other pests.

Technology needs to be perfected for successful non-chemical control of codling moth. There are many other similar possibilities with insects, mites, aphids, and other pests.

In the pathology area, there are promising antagonistic bacterial organisms; "good" bacteria that can consume "bad" bacteria. Those need to be nurtured to develop non-chemical systems of disease control also show promise in scientific experiments.

Reduction of sprays would further protect the consumer from residues, reduce air, water and soil pollution and lessen hazards to farm workers.

POSTHARVEST TECHNOLOGIES - To conduct research on the postharvest aspects of apples to enhance the keepability; reduce the use of chemicals for pathogens and maladies in stored fruit; perfect systems of segregating apples based on internal quality, firmness or other criteria. To develop technology that will reduce loss of

stored fruit; extend the keepability and thus the marketing season; ensure a consistent high quality apple for the consumer; and enhance the export potential of apples.

To provide a consistent high quality product to the consumer, sustain exports and ensure that apples will retain flavor and firmness in storage without rotting, promising technologies need further research attention.

Firmness is a universal measurement of quality. Apples from a given box will vary considerable in firmness, and thus in keepability and consumer aceptance. Promising research that could result in instrumentation in the packing line that would measure each fruit for firmness and segregate those less firm from more firm is under development and needs to be pushed forward.

A storage technique involving use of very low oxygen, if perfected, promises to reduce "scald," a discoloration of the skin of the fruit that is now controlled with chemical agents. Perfection of scientific knowledge in that area would reduce use of chemicals, improve quality and greatly enhance export potential.

Study of relation of mineral nutrition, particularly calcium, to product quality, storage and market life is an area of intense need. Research with use of antagonistic bacteria to control decay in stored fruit is as applicable as use of beneficial bacteria in growing.

OTHER - In addition to the above high priority areas there is a significant list of other problems which can be solved through focused research projects. These include invstigations in the areas of mineral nutrition in both the tree and fruit; the perfection of mechanical harvest or other systems of mass removal from trees for the fresh market; new rootstocks and varieties that best meet the needs of U.S. growers; growth regulators to ensure tree size control, enhance annual bloom, and adequately thin overset crops of apples; and the effective control of weeds and animal predators.

These are examples of areas where scientists, with additional funds, could much more rapidly achieve success in developing information of use to all aspects of the apple growing, handling and marketing chain.

ATTACHMENT B

Facts About Apples and the Apple Industry in Support of Funding Apple Research

THE APPLE . . .

- is grown as over 2,500 varieties in the United States — however, 15 popular varieties account for about 90% of the production — in fact, eight of these (Red Delicious, Golden Delicious, McIntosh, Romes, Granny Smith, Jonathan, York and Stayman) account for 80% of U.S. production;
- is a popular, healthy, regularly consumed food year round — 70% of Americans say apples are their favorite fruit for snacking — nine out of ten families purchase apples and apple products regularly;
- is rich in fiber, has no cholesterol, only 81 calories — and has a delicious flavor;
- is uniquely versatile for the consumer — the apple can be crunched, cooked, sliced, diced, sauced, sipped, and even candied, garnished or used as a decoration;
- there is no stopping the apple as America's favorite fruit

THE U.S. APPLE INDUSTRY . . .

- in an average year produces 210 million bushels of apples — production reached over 250 million bushels for the record 1987 crop;
- produces nearly a bushel (42 pounds) of apples per capita — that's equivalent to about 100 apples per person in the U.S.;
- grows apples commercially in 35 states. Top producing states include Washington, New York, Michigan, California, Pennsylvania, Virginia and North Carolina;

- is made up of over 11,500 commercial growers who are individual family owned small businesses operating over 473,000 acres of bearing orchards;

- gross returns to growers exceeds $1 billion annually ranking apples second only to grapes as a leading non-citrus fruit produced in the U.S.;

- in addition to growers, consists of more than 1,000 specialized firms which add another $1 billion in value through the handling, processing and marketing of apples;

- generally 55% of the U.S. apples are eaten as fresh fruit and 45% processed into apple products. Of those processed annually, approximately 45% is pressed into juice; 35% canned mostly for sauce, with the remaining 20% frozen, dried or other purposes such as baby food, apple butter, jelly and vinegar;

- production is located 50% in the West; 35% in the East and the balance of 15% in the Central states;

- is a net exporter of fresh apples with annual exports over the past 5 years ranging from 8 to 15 million bushels. This is offset by imports which have been relatively stable at the six million bushel level during this same period;

- ranks high as a global producer of apples — producing approximately 20% of the reported world commercial production (Russia and China do not report); 25% of the Northern Hemisphere total apple crop, and 80% of the apples grown in North America;

- provides a top performing product for the retailer with apples tied for first place with bananas, each representing 18% of fresh fruit sales. Apples are alone at the top in profits for retailers with a 40% gross-margin return.

INTERNATIONAL ASSOCIATION OF FISH AND WILDLIFE AGENCIES

STATEMENT OF R. MAX PETERSON, EXECUTIVE VICE PRESIDENT

The International Association of Fish and Wildlife Agencies, founded in 1902, is a quasi-governmental organization of public agencies charged with the protection and management of North America's fish and wildlife resources. The Association's governmental members include the fish and wildlife agencies of the states, provinces, and federal governments of the U.S., Canada, and Mexico. All 50 states are members. The Association has been a key organization in promoting sound resource management and strengthening federal, state, and private cooperation in protecting and managing fish and wildlife and their habitats in the public interest.

The Association's members are keenly interested in appropriate funding of agricultural programs to foster conservation efforts. Our member states have long worked with, and are committed to continue working with, the agricultural community to best manage the Nation's fish and wildlife resources. The key to wildlife management in most of the United States is working on private lands, largely with agricultural lands. The Association submits this statement on the FY 1991 budgets of the Soil Conservation Service, Agricultural Stabilization and Conservation Service, U.S.D.A. Extension Service, and Animal and Plant Health Inspection Service in the spirit of cooperative resource management.

SOIL CONSERVATION SERVICE (SCS)

The Soil Conservation Service has responsibilities for implementing conservation provisions of the 1985 Food Security Act (FSA), addressing nonpoint source pollution mandates of the 1987 Water Quality Act, and addressing the President's "no net loss" wetland policy. The FY 1990 budget provided $725.4 million and 13,821 staff years for carrying out SCS activities and responsibilities. The proposed FY 1991 budget reduces funding by $2.4 million and 356 staff years. The requested funding level provides for continuation of all programs except the Rural Abandoned Mine Program. The FY 1991 budget request expands SCS technical assistance as part of the ongoing USDA water quality initiative and increases the Great Plains Conservation Program. However, a general decrease of funding and staff years is proposed for technical services to implement the final stages of the 1985 Food Security Act.

About 140 million acres of cropland in the U.S. are considered highly erodible and must be managed to meet conservation compliance provisions of the 1985 FSA. The deadline for completing conservation plans was January 1, 1990 and SCS has nearly completed this task. However, at least 30 percent of these plans are expected to be revised annually as producer objectives and management practices change. In addition, SCS has important responsibilities in verifying and assisting in the implementation of sodbuster and conservation compliance plans.

The Association requests the Congress examine SCS funding and staffing levels carefully to ensure that programs and activities are sufficiently funded to meet all scheduled responsibilities in implementing conservation provisions of the FSA. The Association recommends that additional funds be provided to support 200 additional field biologists to complete wetland determinations and other conservation provisions of the FSA. In addition, adequate funding and staffing must be maintained to provide technical services necessary to implement ASCS conservation programs, especially the Conservation Reserve Program (CRP), Water Bank Program (WBP), Forestry Incentives Program (FIP), and Agriculture Conservation Program (ACP).

SCS water resource programs assist with planning and construction of watershed and upstream flood protection projects to use non-structural practices that reduce property damages, erosion and sediment. These programs offer unique opportunities to restore and protect wetlands in accord with Presidential wetland initiatives. The Association supports the SCS legislative proposal to require cost-sharing for watershed planning and construction, consistent with the 1986 Water Resources Development Act and supports funding at the SCS proposed level of $151 million. Furthermore, the Association recommends that SCS establish and give priority attention to cost sharing for acquisition of perpetual wetland and floodplain conservation easements and application of non-structural land treatment practices. Such changes are needed to provide more balanced financial assistance to local sponsors and to perpetuate and enhance wetland functions to retain floodwaters, improve water quality, and provide fish and wildlife habitat.

The North American Waterfowl Management Plan (NAWMP) calls for working with agricultural interests to implement the Plan. The Association requests the Congress urge that SCS assist the U.S. Fish and Wildlife Service and state fish and wildlife agencies in implementing actions called for the six U.S. joint ventures of the Plan.

AGRICULTURAL STABILIZATION AND CONSERVATION SERVICE (ASCS)

An adequately funded budget for the Agricultural Stabilization and Conservation Service is essential to implement the conservation provisions of the FSA as ASCS programs have tremendous impacts on natural resources.

Agricultural activities have been among the leading cause of nonpoint source pollution and wetland loss and degradation. The President's commitment to wetlands protection requires full implementation of the Conservation Reserve Program (CRP), arguably the largest ASCS conservation program of this century. The FY 1990 ASCS budget included a net CRP appropriation of $1.01 billion, after $61.5 million that was transferred to SCS for technical assistance and related programs. In addition to direct CRP appropriations, ASCS continues to receive $624 million from the Commodity Credit Corporation for salaries and expenses associated with implementing CRP and other conservation provisions of the FSA.

It is estimated that over the 10-year life of CRP, with 40 million acres enrolled, a net savings to Commodity Credit Corporation will be achieved. Specifically, CRP payments will be $22.4 billion, thereby reducing CCC payments by $11.8 billion for a net cost of CRP of $10.6 billion. The Administration's FY 1991 budget recommends CRP funding of $1.878 billion and $630 million for salaries and expenses. This appropriation is based on a $395 million carryover balance from FY 1990 to implement CRP in FY 1991. The recommended CRP appropriation includes monies for annual rental payments for 6 million acres to be enrolled through September 30, and for part of the costs of technical assistance and cost-sharing necessary to establish protective vegetative cover on CRP lands. The Association commends USDA, and ASCS in particular, for implementing the Conservation Reserve Program and urges the Secretary establish and implement additional signups necessary to place 40-45 million acres in the CRP during 1990. The Association also urges ASCS to develop additional incentives to enroll pastured riparian zones, encourage bottomland hardwood establishment, wetland restoration, field windbreaks/shelterbelts, and wildlife habitat and filter strip establishment to assist in water quality and wetland initiatives.

The Water Bank Program (WBP) protects and enhances private wetlands with a high potential for conversion to agriculture. FY 1990 funding of $12.4 million was necessary to help maintain 10-year WBP contracts on existing acreages. The Association supports the increased funding level for the WBP of $12.8 million to further enhance wetland protection measures and supports the Administration's proposal to allow perpetual easements on lands with expiring WBP contracts. This increased funding level is necessary to maintain wetland protection on existing acreages.

The Association also supports continuation of the Agricultural Conservation Program (ACP) at funding levels that emphasize wetland restoration, water quality improvement and implementation of conservation management plans for up to 140 million acres of highly erodible croplands. In addition, the Association recommends that ASCS closely examine approved cost-sharing practices, particularly conservation tillage practices, and redirect funding towards those practices that achieve the highest degree of soil erosion reduction, water quality improvement, and resource protection.

New approaches are needed to address crop depredation by wildlife at the federal level and ASCS is in a position to formulate and implement solutions. Using ACP and FIP practices as models, ASCS and APHIS-ADC also should jointly develop a list of approved techniques and cost-share rates for animal damage abatement. Possible techniques include repellents, fencing, scare devices and lure crops. A specific approach that would be helpful in several states is cost-sharing for deferred fall plowing of corn stubble. Such a practice would help reduce wildlife depredation of unharvested fields and protect land susceptible to soil erosion.

The Association further recommends that Congress examine ASCS funding and staffing levels to help ensure that sodbusting, swampbusting and conservation compliance provisions are implemented and enforced. In particular, adequate training and resources are needed to assist in verifying and spot-checking implementation of conservation plans.

In addition to its conservation programs, ASCS administers a major $6-10 billion commodity program that affects more than 220 million acres of commodity cropland base. Included in that acreage total is an average of more than 40 million acres that are idled annually under the Acreage Reduction Program (ARP). This program should explicitly support the President's water quality initiative. Therefore, the Association recommends that ASCS cost share and require perennial vegetative cover on all ARP lands to reduce soil erosion and help abate flow of agriculture contaminants to groundwater and surface waters.

EXTENSION SERVICE -- U.S. DEPARTMENT OF AGRICULTURE

The Administration proposes a $24.5 million reduction in the Cooperative Extension System budget which would result in a substantial reduction in formula funds to the states and the elimination of many important programs. The Association recommends restoring the budget to FY 1990 levels and to expand efforts in education programs that focus on critical natural resource issues.

The Association appreciates and supports the Smith-Lever portion of the Extension Service budget which enables the agency to sustain its important education programs. It also recognizes that the Extension Service has assumed a leadership role for education to increase understanding and implementation of conservation provisions of the FSA. The Association commends the Cooperative Extension System and the Extension Service, USDA, on the process that has been set in motion over the past three years.

The FY 1991 budget contains support for a national water quality initiative program. The $15.5 million request for water quality is a positive step. Water quality issues, particularly the voluntary reduction of non-point sources of contaminants and developing an understanding of public benefits of clean water are urgent. The education programs of the Cooperative Extension System are an integral element in dealing with these problems and additional funding is needed. The FY 1991 budget terminates funds to support the Renewable Resources Extension Act (RREA) of 1978, which authorized $15 million yearly to support comprehensive natural resource education programs in each state. Past appropriations have provided a leveraging effect in the states and a sense of a national commitment to the importance of natural resource programs. As a result of RREA appropriations, states have invested three dollars for every RREA dollar appropriated. The Association does not want to lose this leverage to encourage state and local commitment and investment.

Additional funding is needed for conservation and management of natural resources. This initiative is essential for achieving the maximum potential of conservation provisions of the FSA and to address Presidential goals for tree planting and "no net loss" of wetlands. Such an emphasis also is needed to assist farmers in making their operations more sustainable and profitable.

The Association recommends restoration of the Extension Service budget to FY 1990 levels with priority given to conservation education activities to implement the FSA; an increase for the Renewable Resources Extension Act to $6 million; and supports the Administration proposal for funding $15.5 million for Water Quality management and education efforts.

ANIMAL AND PLANT HEALTH INSPECTION SERVICE (APHIS)

APHIS is the federal agency responsible for controlling wildlife damage to agriculture, aquaculture, forest, range and other natural resources; for protecting public health and safety through control of wildlife-borne diseases; and wildlife control at airports. Its control activities are based on the principles of wildlife management and integrated pest management and are carried out cooperatively with state fish and wildlife agencies. Most of the APHIS operational work is cost shared between the Federal Animal Damage Control (ADC) program, state and county governments, agricultural producers, and other cooperators. The cooperation and support of the agriculture community is essential to maintaining wildlife populations. A progressive animal damage control program which minimizes the adverse impact of wildlife populations is necessary to maintain that support and to counter increasing pressures for indemnity due to wildlife damage. The Association commends APHIS/ADC on the progress made in the transition of ADC from the Department of Interior to the Department of Agriculture, but notes that it was underfunded and understaffed at the time of transfer. ADC can be progressive, responsible and successful only if adequately funded.

Although the Association supports the Administration's ADC budget request of $32.0 million, the $2.6 million increase over FY 1990 only provides funds to keep up with inflation but does not address critical issues facing the program such as personnel shortages and equipment needs. Increasing demands for services, without funding for personnel and capital outlays for outdated transportation and other field equipment, jeopardizes the entire program delivery system. The Association recommends an increase of $3.0 million over the President's budget to meet the critical equipment needs and address migratory bird, predator and depredations to fish culture and aquaculture. The Association is concerned that past Congressional increases have not resulted in much improvement at the field level. Allocation figures provided through the National Animal Damage Control Advisory Committee indicate dramatic increases in USDA administrative charges with only small percentage increases in field level funding.

The President's budget does not contain any additional funds for research. The Association recommends an additional increase of $2.0 million over the President's budget for pesticide registration activity. New registration requirements under the amended Federal Insecticide, Fungicide, and Rodenticide Act have added significantly to the cost of maintaining registrations. The recommended increase is needed to maintain the current control tools.

In summary, the Association supports the Administration budget request for $32 million as a base and further recommends adding $3.0 million for critical equipment needs and operations; and $2.0 million for pesticide registration for a total APHIS/ADC budget of $37.0 million.

In conclusion, the Association supports budgets that recognize the multiple resource impacts of these Department of Agriculture agencies, while concurrently recognizing that these programs are primarily occurring on private lands. Our member state fish and wildlife agencies are committed to working cooperatively with private landowners, rather than against them.

INTERSTATE CONFERENCE ON WATER POLICY

STATEMENT OF JAMES K. COYNE, EXECUTIVE DIRECTOR

The Interstate Conference on Water Policy (ICWP) is the independent national association of state, interstate and regional water administrators concerned with water quantity and quality management, conservation and development. Since 1959, ICWP has been the voice for state water resource management concerns, particularly with regard to the relationship between state and federal programs, regulatory authority and information exchange.

ICWP has long been committed to a cooperative partnership between federal and non-federal interests in solving the nation's water resources problems. The partnership involved in the Small Watershed Protection and Flood Prevention Program under PL-566 and PL-534 is an outstanding example of that valued effort. The program requires a non-federal commitment from state and local project sponsors and a similar federal commitment through the U.S. Department of Agriculture and the Soil Conservation Service.

At the end of 1989, there were 379 projects under construction through PL-566 with an additional 203 in the pre-construction phase. During 1990, 20 new construction starts are anticipated under current funding.

Under PL-534, it is estimated that 19 projects will be in pre-construction and 91 actually under construction this year.

But the outlook for both programs is harshly impacted by the Administration's FY 1991 budget proposal. A total reduction in Watershed and Flood Prevention Operations of $30 million has been proposed for FY 1991, with the PL-566 program reduced by 11 percent or $15,123,000. The PL-534 program is targeted for a 22 percent cut or $5,889,000.

The proposed reduction of $2,112,000 in River Basin Surveys and Investigations would cut the cooperative study effort, flood plain management studies, interagency coordination and program formulation by 15 percent and Watershed Planning, faced with a proposed cut of $2,062,000, would see those activities continued at about 78 percent of the 1990 level of activity.

The Interstate Conference on Water Policy commends this subcommittee for its efforts to keep these vital water resources programs viable throughout the years. Last year that support resulted in some $180 million being made available for Watershed and Flood Prevention Operations. However, to maintain the same level of activity for FY 1991, $192 million will be required for the coming fiscal year.

Additionally, the River Basin category would need funding at $13 million and Watershed Planning would require an expenditure of $10 million for a total expenditure for Watershed and Flood Prevention Operations of $215 million as opposed to the $168 million proposed by the Administration.

Optimum funding to accommodate all proposals in various stages of development in the pipeline would approach a required funding level of $321 million for FY 1991 which we recognize is not feasible due to budget constraints.

However, it is the view of ICWP that the maintenance of a healthy and viable partnership under the Watershed Protection and Flood Prevention Program requires that our federal partners have the financial means to fulfill the responsibilities defined in the various cooperative agreements. The FY 1991 Administration budget proposal falls short of that goal.

The Interstate Conference on Water Policy has been consistent over the years in expressing its concern over the historic decline in funding levels for USDA water resources activities. The ICWP Statement of Policy reflects the value of these activities by stating, "ICWP believes the development and management of the water resources in small watersheds is vital to the economic well-being of the Nation for flood control, water supply and irrigational purposes. The installation of land treatment measures is similarly vital to the quality of the Nation's waterways as a means of controlling soil erosion and sedimentation."

This Statement of Policy takes on an even stronger significance in view of the Administration's pronouncement earlier this year of new initiatives regarding rural economic development.

ICWP believes the revitalization of the PL-566 program for the reduction of flood losses, soil erosion and sedimentation control and creation of new water supply sources will enhance the rural development effort by assisting diversification and providing needed community services to rural areas and small towns.

ICWP has joined with other state and national organizations in the National Watershed Coalition which has as its focus improved viability of the PL-566 program coupled with adequate federal funding for project implementation.

We believe the Nation has much to gain from the efforts of such a Coalition in renewing the vitality of the PL-566 program in cooperation with the Congress and the U.S. Department of Agriculture. We respectfully request that the subcommittee consider this new effort and provide funding levels for the Small Watershed Protection and Flood Prevention Program which will permit this initiative to move effectively forward.

ICWP wishes to again commend the members of this subcommittee for its continuing support of this valued program.

INTERTRIBAL AGRICULTURE COUNCIL

STATEMENT OF ROBERT L. MILLER, PRESIDENT

The Intertribal Agriculture Council (IAC) is an organization of 53 dues paying member tribes who together control 43 million acres, or 79 percent, of the 54 million acres held in trust by the United States for Indian people. The IAC was founded by charter in 1987 to promote improvement in Native American and Alaska Native agriculture. We are governed by a Board of Directors composed of elected tribal representatives from each of the twelve regions of Indian Country, reflecting the diverse character of Indian agriculture.

As this continent's first farmers, Native Americans developed many of the foodstuffs which are today eaten all over the world. Long before the first European settlers arrived on the eastern shore, Indian's had cultivated and perfected many different varieties of potatoes, tomatoes, corn, summer and winter squash. Many fruits and nuts were also cultivated by the original Americans: bananas, pineapples, avocados, plums, various cherries, walnuts, chestnuts, pecans, and filberts, are just a few examples of the contributions of Native Americans to world diet.

Agriculture production is still the main enterprise in Indian Country. According to reports of the Bureau of Indian Affairs, Indian agricultural production in 1984 was valued at almost two and half times the value of all oil and gas income and nine times the value of all forest products on Indian lands. The BIA has also reported that the agriculture sector is far and away the largest single employer of Indian people, with upwards of 34,000 Indian families engaged in commercial Agriculture and 45,000 engaged in subsistence agriculture.

In the recent past, it became obvious that Native American farmers and ranchers were not participating to any great extent in the programs of the U.S. Department of Agriculture, and therefore were falling further and further behind their non-Indian counterparts. The Intertribal Agriculture Council has been working at correcting this deficiency since its inception, with some success. In the last two years the USDA Agriculture Stabilization and Conservation Service (ASCS) has included Indian landowners in their county balloting process for the first time ever. Farmers Home Administration (FmHA) officials and ASCS officials have made on-site visits to reservations to meet with local residents and the tribal governments and hear their concerns, and the eligibility regulations for some ASCS programs which previously excluded or discouraged Indian applicants have been adjusted to promote Indian involvement. Both of these agencies have started outreach programs to better inform Indian farmers and ranchers of available services.

As we continue our efforts to break down barriers which inhibit Indian participation in national farm programs available to all American farmers and ranchers, we have two main concerns relating to the President's 1991 budget justification for the Department of Agriculture. These are: creation of a USDA presence in Indian country through the re-establishment of Cooperative Extension Agents on Indian reservations, and using the Agriculture Marketing Service to aid in establishing access to existing overseas markets for Indian agricultural and value added products. Each of these concerns is treated separately below.

COOPERATIVE EXTENSION SERVICE.

Introduction:

The re-establishment of Reservation Extension Agents to provide extension services to the American Indian communities has been a major project of the IAC for the past 2 years. In attempting to re-implement this agriculture program of critical importance to the reservation communities we have worked closely with USDA officials. Last November USDA Extension Agents and representatives of the IAC prepared a proposal to re-establish agents on the larger reservations, which is the basis for the recommendations made here.

Background:

Cooperative Extension Agents provide the link between new agriculture technologies developed by the Land Grant Colleges and the application of these developments by the nation's farmers and ranchers. They also serve a liaison function with other USDA programs, such as FmHA; assist in developing Farm plans for financial institutions, provide training in Farm and Ranch business management and record keeping, supervise youth activities such as 4-H, and coordinate special training programs such as food storage techniques, nutrition, and subsistence gardening.

Indian producers are excluded from receiving extension services by the elected off-reservation county committees which control extension services at the local level. Various reasons are given for this exclusion, but the most acceptable one, explained by a ranking USDA administrator in the Cooperative Extension Service involves the funding sources. Funding for the Cooperative Extension Service comes from 4 levels:

Federal Government -	32%
State funds -	47%
County funds -	18%
Private sources -	3%

Reservations are not under county and state jurisdiction in most instances, and therefore do not directly contribute to the county or state tax rolls, although Federal impact funds are provided. The County Extension Agents are directed by county commissioners and committees who may feel justified in excluding reservations from the service area. In order to obtain extension services several tribes are currently using their own financial resources to pay federally supported Land Grant Colleges to provide them with an Extension agent.

Recommendation:

The remedy to this situation is to re-establish the program of reservation agriculture extension agents specifically to serve those Indian reservations and tribal jurisdictions with sufficient acreage or population to be roughly comparable to counties in size or complexity. This will mean establishing one Agricultural Extension Agent on each Indian Reservation, Indian Community, Native Association, or Consolidated Agency with at least 120,000 acres, and 2 agents on those reservations with over 1,000,000 acres. A total of 86 agents will be required to implement this program at an average cost of $64,000 each, including support costs, as shown below:

Item	Cost per year (in thousands)	
Personnel :		
Agent (full grade equivalent to GS-11/5)	$34.0	
Secretary (1/2 time, GS-4/5 equivalent)	8.0	
Fringe (20%)	8.4	
Total yearly Personnel Services:		$50.4
Operational Costs		
Supplies and Expense:	$2.4	
Travel and Training	4.0	
Local transportation/Vehicle expenses	3.6	
Equipment	3.6	
Total Operational Costs		$13.6
Total yearly cost per Reservation agent:		$64.0

In developing this average budget it is recognized that actual costs will vary from state to state. Office costs, including rent, furniture, telephone, and etc. will be borne by the recipient tribe as an in-kind contribution. The first year delay in implementation caused by recruitment time frames will provide considerable personnel lapse money for the procurement of necessary equipment, such as Ag-Net compatible mini-computers. In some remote areas additional costs in housing allowances or similar enticements may be necessary to recruit suitably qualified individuals. Equipment costs in subsequent years could be reduced and will allow flexibility to cover those few positions which require housing allowances or similar unusual or unplanned expenses.

A separate program of direct extension assistance to those reservations which do not qualify based on acreage criteria, but which demonstrate unmet needs due to isolation or other factors, should be established under the national office of the Cooperative Extension Service as an integral part of this initiative. The purpose of this Direct Assistance Program is to provide direct response to specific tribal government requests for extension services by supplying resources to those entities which provide the actual service. This could include the Extension Service directly, a land-grant college, the tribal government, or a separate contractor approved by the Cooperative Extension Service. This national program segment will require initial funding at $1,000,000 per year, and be operated directly out of the Cooperative Extension Service offices in Washington, DC.

The total expense will be $6.5 million, the state breakdown is as follows:

State	Agents Needed	Cost (in thousands)
Alaska	4	$256.0†
Arizona	19	$1,216.0
California	2	$128.0†
Colorado	2	$128.0
Florida	1	$64.0†
Idaho	3	$192.0
Maine	1	$64.0†
Minnesota	2	$128.0†
Montana	8	$512.0
Nevada	4	$256.0†
New Mexico	11	$704.0

North Dakota	1	$64.0
Oklahoma	3	$192.0†
Oregon	1	$64.0†
South Dakota	10	$640.0
Utah	4	$256.0
Washington	6	$384.0†
Wisconsin	2	$128.0†
Wyoming	2	$128.0
Direct Assistance Program (Washington D.C. office)	-0-	$1,000.0
States: 19	Agents: 86	$6,504.0

† Listed States which are most likely to benefit from the Direct Assistance program. Other States in this program include: Connecticut, Kansas, Louisiana, Michigan, Mississippi, Nebraska, and North Carolina.

These funds could be appropriated under section 3(d) of the Smith Lever act, used only for direct extension services on reservations and would not be subject to university overhead or state matching requirements.

The emphasis of the reservation extension program will be on traditional extension service activities in agriculture development, management and the youth activities of 4-H. In addition to conducting traditional agricultural and youth extension programs, the reservation extension agents will serve as primary liaison and referral source between the reservation or Indian community and local USDA agencies and programs.

These reservation extension programs must be provided with the same level of technical support from the Land Grant Colleges as county programs. The reservation extension agents will be employees of the Cooperative Extension Service unless the program is operated by a tribal government under the provisions the Self-determination Act (25 USC 450 et. seq.), and will be supervised by the appropriate Cooperative Extension Service official at the state level in consultation with tribal governments. In addition, Reservation Extension Advisory Committees comprised of at least 3 members elected from the local reservation community will be established. These advisory committees will function in the same manner as existent county committees to identify extension education needs, provide referral for local community concerns, set program priorities, and review and approve Cooperative Extension plans of work. Exhibit 1 provides a listing of the potential Extension Agent assignments by tribal location.

INTERNATIONAL MARKETING ASSISTANCE

Introduction:

Recent visits with Oriental and European marketing specialists, sponsored by the American Indian Trade and Development Council, have indicated that a potentially large and viable market exists for authenticated American Indian products in both the Pacific Rim nations and in Europe. The IAC is proposing that the Agricultural Marketing Service be directed by the Congress to extend its marketing assistance to the Native American agriculture community in accessing these specialty markets.

Background.

The American Indian agriculture community produces numerous agriculture products, including many of a traditional nature In addition, many individuals and organizations are operating small cottage industries which utilize agriculture products, such as wool, to create value added products such as the famous Navajo blankets. However, the marketing of authentic Native American agriculture products is largely limited to existing markets in nearby communities and major railway loading points. Speciality products, such as Indian corn, gourds, and wild rice are sold at local tourist locations or to major trading houses, often at substantially reduced prices if they can be sold at all.

At the same time, a thriving market for all Native American products is reported throughout Europe and the Orient, and especially in both Japan and West Germany. Unfortunately, the products marketed in these locations are generally not produced by Native Americans nor do they originate in the United States. Even in major Indian centers in the United States many tourists and travelers are buying products which they believe to be the products of American Indians when in fact they originated in Taiwan or Latin America. A popular label in Arizona reports that the product was "Made by Indians of the Americas" and then in small print indicates it is a product of Colombia. While this mass marketing of the American Indian mystique is going on around the world, the true American Indian and the United States in general are not participating in this international trade, and Native Americans remain at the bottom of the economic ladder in this country.

Recommendation.
In an effort to define the necessary actions to correct these deficiencies which negatively affect the American balance of trade, the Intertribal Agriculture Council has sponsored, as part of the Annual Indian Agriculture Symposium, a series of workshops on marketing. These sessions, attended by Indian leadership and international marketing specialists as well as representatives of other Tribal organizations, have resulted in a plan of action which could correct this unfavorable trade situation. This proposed program consists of 3 steps:

1. Develop, register, and administer a Native American and Alaska Native Certification Mark.

> The development and registration of a Certification Mark, to be used by bona fide Native American individuals and enterprises, would have an immediate affect on the world market for speciality Native American agriculture products and value added products of an agriculture nature. Coupled with the design and implementation of this distinctive Certification Mark is the worldwide information campaign to ensure recognition in the target markets.
>
> It is suggested that the development and registration of the necessary mark could be achieved in short order, but the necessary international informational campaigns would be of a longer duration, and somewhat more expensive. Equally important is the development of certification procedures and maintenance of the records which indicate who is approved to use the certification mark. Preliminary review indicates that this phase of the program can be accomplished for approximately $200 thousand, including the international information campaign, if existing tribal organizations are enlisted to assist in the effort.

2. Develop and publish a yearly Indian Agriculture marketing guide.

The publication of an Indian Agriculture Marketing Guide which lists the Indian suppliers of products available for the targeted markets, their pricing structure, availability and contact points, as well as other pertinent data, will improve the access by both buyers and sellers to the true American Indian products currently being copied at home and abroad. The operations necessary to prepare such a guide include gathering product data on a tribe by tribe basis, creation of computerized data bases to maintain product availability and pricing information, and development of monitoring systems to ensure that the data base information remains current and reliable. Again, use of existing tribal organizations and governments can greatly streamline and enhance this project.

Once established, this marketing guide could be supported by the individual sellers or buyers through dues and marketing guide sales receipts. Estimated cost of creating this system is $150 thousand.

3. Implement a series of Seminars and training sessions on International and local market access for Native Americans and Tribal Governments.

The international marketing of agriculture produce and value-added products is a specialized field of endeavor which is currently beyond the experience of most tribal governments and individuals. A series of USDA sponsored training sessions could greatly increase Indian capabilities in this area.

The purpose of the seminars would be to inform Native American producers and tribal governments of available resources and markets, and provide specific information on strategies for accessing international markets. First year cost of program is estimated at $240 thousand, based on 12 regional seminars of 3 days each using 80% USDA specialists and 20% private sector contractors at a total predicted cost of $20,000 per session.

We in the Intertribal Agriculture Council are grateful for the opportunity to submit testimony on these issues of importance to the Indian Agriculture community.

Exhibit 1. Acreage figures for potential placement of Extension Agents under the guidelines recommended by the Intertribal Agriculture Council. Tribal Jurisdictions are listed by BIA Area, State and Agency. Source: Annual Report of Indian Lands; U.S. Department of the Interior - Bureau of Indian Affairs, Office of Trust Responsibilities. September 30, 1985.

Agency or Reservation	No. of Tribes or Reservations	Acreage	Extension agents needed
Aberdeen Area			
	Nebraska		
Winnebago Agency (inc: Ia)	3 Reservations	64,399	0
	North Dakota		
Fort Berthold	3 affiliated	419,361	1
Fort Totten	1	53,239	0
Turtle Mountain	1	33,318	0

South Dakota

Cheyenne River Sioux	1	1,395,904	2
Crow Creek	1	125,483	1
Lower Brule	1	130,239	1
Pine Ridge (inc: Ne)	1	1,780,443	2
Rosebud Sioux	1	954,571	2†
Sisseton (inc: ND)†	1	108,134	1†
Standing Rock (inc: ND)	1	847,252	1
Yankton	1	36,558	
	Aberdeen total		11

Albuquerque Area

Colorado

Southern Ute	1	310,001	1
Ute Mountain Ute (inc: Ut & NM)	1	597,328	1

New Mexico

Jicarilla Apache	1	823,580	1
Laguna Pueblo	1	461,098	1
Mescalero Apache	1	460,678	1
Northern Pueblos Agency	8 Pueblos	241,959	1
Ramah Navajo	1	146,953	1
Southern Pueblos*	10 Pueblos*	342,818	1
*(Does not include Acoma, Isleta or Zia in totals)			
Acoma Pueblo	1	263,611	1
Isleta Pueblo	1	211,034	1
Zia Pueblo†	1	117,702	1†
Zuni Pueblo (inc: AZ)	1	416,182	1
	Albuquerque Total		12

Anadarko Area

Kansas

Horton Agency (inc: Co, Ne, Ok)	4 Reservations	48,111	0

Oklahoma

Anadarko Agency	3 Res.	267,405	1
Concho Agency	1	84,570	0
Pawnee Agency	5	54,999	0
Shawnee Agency	3	38,841	0
	Anadarko Total		1

Billings Area

Montana

Blackfeet Nation	1	939,838	1
Crow Nation	1	1,517,405	2
Fort Belknap Indian Community	2 Affiliated	617,487	1
Fort Peck Assiniboine/Sioux	2 Affiliated	904,688	1
Northern Cheyenne	1	436,948	1
Rocky Boy's Chippewa Cree	1	108,334	1

Wyoming

Wind River Reservation	2	1,888,557	2
	Billings Area Total		9

Eastern Area			
	Alabama		
Porch Band	1	213	0
	Connecticut		
Mashantucket Pequot	1	1,201	0
	Florida		
Miccosukee††	1	75,145	††
Seminole Agency††	5 Reservations	79,028	1
	Louisiana		
Choctaw Agency	2 Reservations	436	0
	Maine		
Passamaquaddy Township	1	67,033	0
Penobscot Nation	1	145,665	1
	Mississippi		
Choctaw Reservation	1	17,926	0
	North Carolina		
Cherokee Agency	1	56,572	0
	Eastern Area Total		2
Juneau Area**			
	Alaska		
Anchorage Agency	Public Domain Allotments	232,357	1
Bethel Agency	Public Domain Allotments	235,649	1
Fairbanks Agency	3	236,959	1
Nome Agency	Public Domain Allotments	175,084	1
Southeast Alaska	Public Domain Allotments	4,079	0
	Juneau Area Total		4**
Minneapolis Area			
	Michigan		
Michigan Agency	7	21,656	0
	Minnesota		
Minneapolis Area Office (inc: Ia)	5	6,893	0
Minnesota Agency	7	197,036	1
Red Lake	1	564,452	1
	Wisconsin		
Great Lakes Agency (inc: MN)	13	195,808	1
Menominee Reservation	1	222,552	1
	Minneapolis Area Total		4
Muskogee Area			
	Oklahoma		
Osage (inc: Ar, Az, Mo, Mt)	Scattered Allotments	[illegible]1,637	0
Osage Reservation	1	168,794	1
Five Civilized Tribes	5 Tribes	473,697	1
Miami Agency	8 Tribes	17,810	0
	Muskogee Area Total		2

Navajo Area			
	Arizona		
Chinle (inc: NM)	1	1,772,488	2
Fort Defiance (inc: NM)	1	3,457,478	2
Western Navajo (inc: Ut)	1	5,408,703	2
	New Mexico		
Eastern Navajo	2	243,129	1
	Utah		
Shiprock	1	1,891,900	2
	Navajo Area Total		9
Phoenix Area			
	Arizona		
Colorado River (inc: Ca)	1	268,691	1
Fort Mojave (inc. Ca & Nv)	1	32,677	0
Fort Apache	1	1,664,972	2
Hopi Reservation	1	1,561,213	2
Kaibab Paiute Reservation	1	120,413	1
Papago Agency (Tohono O'oddam)	3	2,855,968	2
Pascua-Yaqui Agency	1	894	0
Pima Agency	3	393,932	1
Salt River Agency	2	75,186	0
San Carlos Reservation	1	1,826,541	2
Truxton Agency*	4*	190,922	1
*(Does not include Hualapai in totals)			
Hualapai	1	992,462	1
	California		
Fort Yuma (inc: Az)	2	50,049	0
Chemeheuvi Reservation	1	30,653	0
	Idaho		
Owyhee Reservation (inc: Nv)	1	298,819	1
	Nevada		
Eastern Nevada (inc: Ut)*	10*	135,046	1
*(Does not include Owyhee in totals)			
Western Nevada (inc: Ca & Or)*	16*	203,935	1
*(Does not include Pyramid Lake or Walker River in totals)			
Pyramid Lake	1	476,688	1
Walker River	1	323,406	1
	Utah		
Southern Paiute	5	32,421	0
Uintah & Ouray	1	1,021,557	2
Skull Valley	1	17,444	0
	Phoenix Area Total		20
Portland Area			
	Alaska		
Metlakatla	1	86,741	0

	Idaho		
Fort Hall	2 Affiliated	522,510	1
Northern Idaho Agency	3 Res.	155,514	1
	Montana		
Flathead Reservation	2 affiliated	627,070	1
	Oregon		
Celilo Village	1	46	0
Siletz Reservation	1	3,673	0
Umatilla Reservation	1	85,255	0
Warm Springs Reservation	Confederated	643,507	1
	Washington		
Colville Reservation	1	1,063,043	2
Olympic Peninsula Agency	11	164,549	1
Puget Sound Agency	12	32,891	0
Spokane Agency	3	138,340	1
Yakima Reservation	1	1,130,285	2
		Portland Area Total	10

Sacramento Area

	California		
Central California Agency†	44†	104,681	1†
Hoopa Agency	17	96,444	0
Southern California Agency	32	245,606	1
		Sacramento Area Total	2

† Some reservations which fall slightly under the targeted acreage limitation are included in the higher bracket due to their relative physical or cultural isolation.

††The Florida reservations are recommended for consolidation, with a single agent, due to internal similarities: the five Seminole land holdings listed as separate reservations by the BIA are under a central tribal government.

**Alaska acreage figures provided in the BIA report list only "trust" lands; generally individual allotments. Not included in these totals are approximately 44 million acres of Native Village and Native Corporation lands. Some Extension services are currently being provided by the University of Alaska and Native Corporations who use PL93-638 contracts for BIA Extension money, among other funding sources. Larger villages and corporations might be able to justify more than the 4 recommended agents, but this should be a good start which the Alaskans can modify in the future if they feel the need.

Summary of Agents by State:

Alaska	4
Arizona	19
California	2
Colorado	2
Florida	1
Idaho	3
Maine	1
Minnesota	2
Montana	8
Nevada	4
New Mexico	11
North Dakota	1
Oklahoma	3
Oregon	1
South Dakota	10
Utah	4
Washington	6
Wisconsin	2
Wyoming	2
States: 19	Agents: 86

Summary of the number of tribes served under the 120,000 and 1,000,000 acreage limitation, by BIA area office:

Area served	Tribes served	Tribes not
Aberdeen	11	5
Albuquerque	28	0
Anadarko	3	13
Billings	10	0
Eastern	[illegible]	7
Juneau	*	*
Minneapolis	22	12
Muskogee	6	8
Navajo	6	0
Phoenix	46	13
Portland	24	16
Sacramento	76	17
Totals	239	91

Final Note: The totals listed above differ from those in previous IAC testimony: Aberdeen area is shown with 11 agents here, rather than twelve, and Billings Area is shown with 9 rather than eight as previously indicated. Total Tribes does not add to the BIA figure of 248, due in part to the inflation by including all the California "Rancherias" and scattered public domain allotments.

STATEMENT OF IOWA STATE UNIVERSITY CENTER FOR DESIGNING FOODS TO IMPROVE NUTRITION

Summary of Requests

The following pages articulate the progress and goals of the Center for Designing Foods To Improve Nutrition and a summary of a proposal to establish a Midwest Biotechnology Information Center. For FY91 our request can be briefly summarized as follows;

The Center For Designing Foods To Improve Nutrition -
Congress allocated $290,000 in planning grant funds in FY89 and $2.3 million in FY90 which is being matched by $4.2 million allocated by the State of Iowa to construct the facility. The Center is seeking assistance in two areas for FY91 - equipment and operations. The inclusion of this center into the ARS Human Nutrition Center Program would be mutually beneficial.
Equipment needs....$3.5 million
Operations needs...$1.5 million

The Midwest Agricultural Biotechnology Information Center -
This proposed center will be a cooperative effort of the National Agricultural Library and a consortia of land grant universities in the Midwest. Funding is requested for this project which will serve as a pilot for the creation of a network approach to library collections and electronic databases in the area of agricultural biotechnology. Currently the NAL budget for gathering and disseminating this vital information is only $48,000. This proposal would make a significant effort in providing agricultural researchers greater access to information.
Program implementation....$3.5 million

Center for Designing foods to improve Nutrition

According to *The Surgeon General's Report on Nutrition and Health, 1988*, scientific evidence for links between diet and principal causes of death and disability in the United States is even more compelling than the case made for tobacco and health. The choices consumers have and the choices they make determine the nutritional status of the nation. That makes food options and food choices national issues.

The Agricultural Research Service Program Plan for 1986-92 includes among its high-priority national programs "Adequate Human Nutrition," specifically "knowledge of how food production and processing practices relate to human nutritional needs" and "improved understanding of the relationship between diet and health maintenance."

The 1988 National Research Council report, "Designing Foods: Animal Product Options in the Marketplace," emphasizes the same concerns, noting that
preharvest and postharvest technology need to be aligned to modern standards of adequate human nutrition.

A research program that links food production, processing and distribution to human food selection and consumption is a valuable addition to programs in existing USDA-ARS human nutrition centers.

The ISU Center's mission

The Center for Designing Foods to Improve Nutrition was established at Iowa State University to improve nutrition and health maintenance through understanding food selection and consumption and nutrient utilization in coordination with food production, processing, distribution, and design.

The Center will enhance and coordinate ISU research to

- design and develop new foods to improve nutritional quality and consumer acceptance;
- identify the determinants of food selection and consumption;
- identify in foods the naturally occurring nutrients, protectants, toxicants, and non-nutritive factors that affect nutrient utilization and health;

- improve strategies for predicting and modifying food selection and consumption to ensure the nutritional status of consumers;
- develop educational strategies to improve food selection and consumption; and
- provide information for the development, implementation, and evaluation of food and agricultural policies.

The link with USDA human nutrition research centers

The ISU center complements work at the following USDA human nutrition research centers:

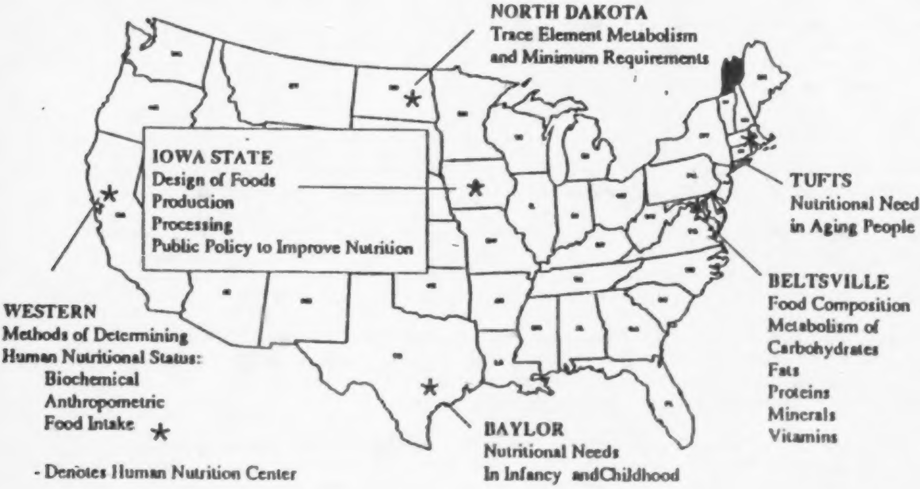
Beltsville--conducts research relevant to 1) human requirements for energy, protein, carbohydrates, lipids, vitamins and minerals; 2) nutrient bioavailability from commonly eaten foods; and 3) development of dietary strategies that can postpone the onset of nutrition-related debilitating disease.

Grand Forks--conducts research to develop for humans recommended intakes of nutrients, with emphasis on trace-mineral requirements that will allow optimal function throughout life.

Tufts--conducts research to explore the relationship between nutrition and good health and to determine the nutritional and dietary requirements of maturing and elderly people.

Baylor--conducts research to define the nutritional requirements that will ensure health in pregnant and lactating women and in infants, children, and adolescents.

Western--conducts research on human nutritional requirements and on nutritional status surveillance, intervention and monitoring; assists in establishing nutritional status and effectiveness of nutrition/food programs.


NORTH DAKOTA
Trace Element Metabolism
and Minimum Requirements
IOWA STATE
Design of Foods
Production
Processing
Public Policy to Improve Nutrition
TUFTS
Nutritional Needs
in Aging People
BELTSVILLE
Food Composition
Metabolism of
Carbohydrates
Fats
Proteins
Minerals
Vitamins
WESTERN
Methods of Determining
Human Nutritional Status:
Biochemical
Anthropometric
Food Intake
BAYLOR
Nutritional Needs
In Infancy and Childhood
★ - Denotes Human Nutrition Center

None of the USDA human nutrition centers is located at a land-grant institution. With a research program that begins with food production and ends with the consumer, the Center for Designing Foods to Improve Nutrition fills a gap in research to improve nutrition and health maintenance. No USDA center has available all the components of food production, food processing, agricultural economics and policy research, nutrition education, and basic nutrition research. All of these components are incorporated into the mission and programs of the center at Iowa State University.

Specialists in agricultural production and biotechnology will work to improve the food farmers raise; food scientists and nutritionists will work to improve the nutritional quality and acceptability of processed foods; economists and specialists in human behavior will analyze the factors that influence what consumers buy and how educational strategies can affect those decisions.

Endorsements of the program have been received from commodity groups, food and feed industry associations, and consumer groups.

ISU research centers/organizations

Among the existing programs that provided the foundation for the Center are these:

The Nutritional Sciences Council

The Nutritional Sciences Council is an interdisciplinary organization established in 1949. More than 60 faculty members belong. It provides seed money for research and sponsors local seminars and national symposia.

The Agriculture and Home Economics Experiment Station

The Experiment Station is Iowa's agricultural research institute. It administers and supports all Cooperative State Research Service projects in agricultural production, food sciences and processing, economics and policy, sociology, child development, family sciences, human nutrition and public education. Several research centers within the Station are particularly important to the Center for Designing Foods. They include:

The Center for Agricultural and Rural Development (CARD)
CARD is the largest university-based center for research on agricultural economics and policy in the United States. One of its four areas of emphasis is food and nutrition. It is affiliated with the Food and Agricultural Policy Research Institute.

The Utilization Center for Agricultural Products (UCAP)
UCAP is an umbrella organization encompassing research in the Center for Crops Utilization Research, the Meat Laboratory and the Meat Export Research Center. Among utilization projects with goals that support the mission of UCAP are the following: 1) modifying the fatty-acid composition of soybeans, 2) screening for natural sources of valuable properties in starch, 3) identifying and evaluating natural antioxidants, 4) increasing the solubility of soy protein, 5) altering fat composition in processed meats, 6) reducing sodium levels in processed meats, and 7) reducing microbial contamination in meats.

The Agricultural Biotechnology Program
The Agricultural Biotechnology Program is funded by the State of Iowa. In 1988 more than 100 faculty members from five colleges were involved in the program. Projects include research to manipulate the synthesis of fatty acids, proteins, and vitamins in plants and animals.

The research program

The center will enhance and coordinate interdisciplinary research throughout the University. To meet the mission and objectives of the Center, the research program focuses on four main areas:

- **Improving strategies for predicting and modifying behavior in food selection and consumption**
  Research in this area includes studies of intrinsic and extrinsic factors that affect food selection and consumption. Various consumer groups will be studied at the individual, household and community levels. Research results will be used to help plan research in other areas of emphasis.

- **Modifying production and processing to improve the nutritional quality of foods**
  Modifications of agricultural commodities, changes in food-processing procedures, and changes in selection and preparation of foods are part of this research area. The nutritional impact and health implications of newly designed raw and processed foods will be evaluated.

- **Identifying the health effects of harmful and beneficial non-nutrient food components**
  Modern nutrition must extend beyond the characterization of essential nutrients. Research will focus on raw commodities and processed foods. Researchers will identify naturally occurring food components, protectants, toxicants, and non-nutritive factors that affect nutrient bioavailability, nutrient utilization and health maintenance.

- **Providing models for developing and evaluating policies that affect the nutritional quality of the food supply**
  Public policies affect food supply, food demand, and food quality. 'ISU's Center for Agriculture and Rural Development (CARD) is the largest university-based economics policy research institute in the United States. CARD's food policy group will work with the Center for Designing Foods to Improve Nutrition to conduct research on food and nutrition policy.

Funding history

State
The Iowa General Assembly appropriated $4.2 million for construction of the Center.
The University designated a construction site worth $1.6 million.
Current projects that fulfill the mission of the Center have extramural support totaling $6.0 million.

Federal
In FY89 the USDA awarded $281,300 for facilities planning for the new center.
In FY90 a federal appropriation of $2.3 million was awarded for construction.
The need now is for $3.5 million for equipment and $1.5 million for research program operations.

◆ Budget Request

Operations

	USDA	ISU	State of Iowa	Total
Fiscal Year 1991				
Staff	$ 80,373	$150,000	$ 0	$ 230,373
Office Operation	19,627	0	0	19,627
Research Program	1,400,000	0	150,000	1,550,000
Total	1,500,000	150,000	150,000	1,800,000
Fiscal Year 1992				
Staff	119,084	250,000	0	369,084
Office Operation	23,625	0	0	23,625
Research Program	2,357,291	0	250,000	2,607,291
Total	2,500,000	250,000	250,000	3,000,000
Fiscal Year 1993				
Staff	250,762	300,000	0	550,762
Office Operation	39,000	0	0	39,000
Research Program	4,210,238	0	500,000	4,710,238
Total	4,500,000	300,000	500,000	5,300,000
Fiscal Year 1994				
Staff	409,060	400,000	0	809,060
Office Operation	47,000	0	0	47,000
Research Program	5,543,940	0	600,000	6,143,940
Total	6,000,000	400,000	600,000	7,000,000
Fiscal Year 1995				
Staff	569,544	500,000	0	1,069,544
Office Operation	53,000	0	0	53,000
Research Program	5,877,456	0	600,000	6,477,456
Total	$6,500,000	$500,000	$600,000	$7,600,000

Equipment

An allocation of $3.5 million for equipment is needed for the new facility. Following is a summary of equipment needs.

Offices and Administrative Services

Offices of the director, principal investigators and clerical staff housed in the new facility will be equipped according to standard university procedures. Equipment includes desks and chairs, computer work stations, microcomputers, file cabinets, a copy machine, reception area furniture, bookcases, and credenzas.

Animal Facilities

Animal models are basic to many studies of human nutrition. The animal facilities in the new Center will meet all standards of the Federal Animal Welfare Act, the Public Health Service Guide for Care and Use of Laboratory

Animals, and the American Association for the Accreditation of Laboratory Animal Care. (For research involving large animals, Iowa State's existing large-animal facilities will be used.)

Equipment includes: pass-through cage washer, pass-through bottle washer, autoclave for sterilizing cages and bottles, diet mixers and pelleters, animal caging, metabolism cages and racks, laminar flow safety racks, and furnishings.

Community Nutrition Unit

The Community Nutrition Unit requires computer and telecommunications equipment for survey research. Equipment needs in this unit are office furniture, microcomputers,and telephones.

Human Metabolism Unit

Food preparation equipment and dining areas for feeding experimental diets to 25-30 subjects are needed in the human nutrition unit. In addition, the units require sample collection equipment and laboratory equipment for processing human blood and waste samples. Some research subjects will exercise on either a cycle ergometer or a computerized treadmill that includes an electrocardiograph, and energy expenditure will be assessed with a metabolic cart.

Food Science and Sensory Evaluation Units

Sensory evaluation of foods by human subjects will require evaluation booths, food preparation equipment, and instrumentation for objective measurements of food properties. Ingredients must be stored and foods must be prepared under strictly controlled conditions requiring specialized ovens, stoves, refrigerators and freezers. Evaluation booths will be equipped with computer monitors linked to a single computer. Instruments for measuring chemical and physical properties of food will be required. Among these are the Rheometer, the Instron Universal Testing Machine, and the Fat-o-Meter.

Analytic Laboratories

The analytic laboratories will be equipped to assay metabolites and hormones of carbohydrate, lipid, protein, mineral and vitamin metabolism in both human subjects and animal models. The laboratories will be equipped to allow the safe use of radioactive tracers and strong solvents and acids. They also will be equipped for the use of stable isotopes, mass spectrometry and tissue culture.

Some of the equipment is standard for most laboratories: explosion-proof refrigerators and freezers, analytical balances and other balances, pH meters, low-speed centrifuges, high-speed centrifuges, and microcomputers for each laboratory.

Other items serve the special needs of the center. The two ultracentrifuges separate cellular components of nutritionally important tissues. The four spectrophotometers are basic instruments for optical measurements of biochemical reactions. A specialized gas chromatograph -mass spectrometer is a new tool for isolating and analyzing lipid and fat soluble vitamins from samples that are thermally unstable. The inductively coupled plasma mass spectrometer is the best currently available instrument for detecting trace minerals and small amounts of other elements in foods and biological materials. Several types of instruments for detecting radioactivity will be used to analyze tracers used in metabolic studies.

The Immediate future

Site preparation has begun, and construction of the new facility is scheduled to begin in September 1990. Faculty members from several colleges collaborated to propose the projects selected as the Center's first research initiatives. Collaborators have made temporary arrangements to compensate for the lack of a centralized facility because it is the University's intention to move into a completed facility with a strong program, highly competitive for extramural funding.

The state and federal funding base outlined in this document will be invested in the rapid development of this superior research program.

MIDWEST AGRICULTURAL BIOTECHNOLOGY INFORMATION CENTER:

A PILOT PROJECT

AGRICULTURAL BIOTECHNOLOGY: A NEW INFORMATION CHALLENGE

Agricultural biotechnology is a critical new area of research in the United States, one which has major economic import for the future of this country. Institutions of higher education, the USDA, and agribusiness companies are investing billions of dollars annually to create an infrastructure to support biotechnology research and technology transfer of research findings to the private sector. Unfortunately, little attention has yet been given to providing the information resources necessary to support the scholars doing agricultural biotechnology research. This is a major new research area for land grant institutions and the National Agricultural Library (NAL); and specific funding for information resources has been very limited. For example, in FY90, the National Agricultural Library received only $48,800 to support a new NAL Biotechnology Information Center; by comparison, the National Library of Medicine received $6.7 million in federal funds for support of medical biotechnology information in FY90.

The information and publications needed by libraries to support this research are very expensive, and they are published increasingly in electronic format. For example, one new journal in this area costs $6,000 annually for four issues. Much of the electronic data is costly to search and retrieve; an online literature search on commercial data bases might cost $400 or more. Creation of automated indexes and full text data bases requires enhancements to existing automated information systems in libraries. Providing public access to gene bank data bases (which are being created by USDA and academic researchers) is an entirely new challenge for information specialists. Since much of the literature needed is interdisciplinary, cutting across traditional subject areas, researchers require access to hundreds of data bases and thousands of journals and the assistance of information specialists prepared to acquire, organize, and access this information.

Given the high cost of this information and the loss of purchasing power that traditional library budgets have suffered in the last decade due to inflation and the devaluation of the dollar, no single library can afford to provide locally all the information these researchers will require. In order to meet the challenge of providing agricultural biotechnology information to support the new academic/agribusiness research infrastructure, libraries need to take a new approach to information access. The purpose of this pilot project is to implement an information center based on a new model.

THE INFORMATION CENTER MISSION

Funding is requested to establish a Midwest Agricultural Biotechnology Information Center which would create a network approach to library collections and electronic data bases in the area of agricultural biotechnology. The Center will be a cooperative effort of the National Agricultural Library and a consortium of Midwest land grant libraries whose institutions participate in the Midwestern Universities Alliance. This consortial approach could serve as a model for future biotechnology centers in other geographic areas as this research and literature expands.

USDA is heavily involved in biotechnology and has significantly improved coordination of research and policy activities in this area - both within USDA and with other state and federal agencies. Some funding for information gathering and distribution of NAL's biotechnology information center has been provided - $48,800 in FY90. However, without much greater attention to the information aspects of agricultural biotechnology, agricultural researchers will be at a major disadvantage relative to other researchers nationally and will be hindered in their efforts to compete internationally in biotechnology research.

The National Agricultural Library relies on the nation's land grant libraries to provide grass roots support for agricultural information. In recent years this has resulted in a series of cooperative efforts with the land grant libraries, including cataloging and indexing programs, microfilming of state agricultural publications, document delivery for USDA employees, and projects such as the National Agricultural Text Digitizing Project with 45 land grant libraries which is being managed by the Iowa State University Library. Such cooperation makes the collective holdings of all land grant libraries available to the nation and makes staff expertise and local collections distributed throughout the land grant system available to NAL. These projects have been successfully undertaken by use of interinstitutional cooperative agreements.

The National Agricultural Library has already undertaken four activities which will contribute to the founding of the Midwest Agricultural Biotechnology Information Center:

- NAL, the Library of Congress, and the National Library of Medicine have signed an agreement which defines collection development responsibilities for biotechnology in order to avoid duplication of effort among the national libraries.
- NAL has initiated a small internal NAL Biotechnology Information Center which includes coverage for: genetic engineering - recombinant DNA; tissue culture -plant and animal; single cell protein; immobilized enzymes; biomass for energy or chemicals; embryo transplants - plant and animal; fermentation process; legislation and regulation; risk assessment of the release of genetically engineered organisms; growth hormones; transgenic animals; detoxification using microbes.
- NAL and 45 land grant libraries have gained experience with electronic full text and graphics applications and remote electronic delivery of text through the National Agricultural Text Digitizing Project begun in 1986.
- NAL and Iowa State University have entered into a cooperative agreement by which the ISU Library is designing, with input from other land grant libraries, a distributed network approach to biotechnology information.

These initiatives provide NAL and key land grant libraries with experience important to the successful implementation of a new model for cooperative information delivery in the specialized area of agricultural biotechnology.

PROGRAM OBJECTIVES

The three major objectives of the Midwest Agricultural Biotechnology Information Center program are: (1) to use the subject analysis technique developed by the Research Libraries Group (RLG) called The Conspectus, whereby NAL and participating Midwest land grant libraries would define what aspects of biotechnology each would be responsible for collecting, in what languages and formats, and at what degree of comprehensiveness; (2) to implement the network design developed by Iowa State University for an online linked computer-based information network and mount appropriate biotechnology data bases for shared access among NAL and the participating Midwest land grant libraries; and (3) to investigate consortial approaches to copyright and licensing agreements between publishers, for-profit information providers, and the consortium members.

The Conspectus.--The Conspectus is an analytical methodology used to facilitate the coordination of collections among major research libraries in the United States. Developed by the Research Libraries Group, a consortium of major research libraries, it is a way of analyzing collections and subject specialization in order to divide responsibility among institutions for comprehensive collections in specifically defined subject areas. This methodology would be applied to the area of agricultural biotechnology for those Midwest land grant libraries participating in this information center, based upon the specific research specializations of researchers at each campus. Once the NAL and the participating libraries agreed upon division of collection responsibility, subject specialists at each library would be responsible for ongoing identification and selection of publications and electronic data to be added to their collections or to be made available electronically through the Center. In this way, the research collections would reside where the research was being conducted and also made available nationally.

Network Design.--Because publishing and research will always utilize a variety of formats (e.g. paper, microforms, electronic storage and transmission), the network design must also include access to and delivery of multiple formats. The key to access of the publication or data, regardless of format, is to include the description of the work into existing library bibliographic data bases; the three which are primary to this proposal are AGRICOLA, OCLC, and RLIN. Thus, any material added to the Center by any of the participants will be entered into these national library network data bases. Researchers can search these data bases either in their land grant library or from their own terminals or workstations to identify which library owns a title.

The network design will encompass a variety of electronic delivery techniques: online access to centrally maintained data bases; telefacsimile transmission of full text; and electronic transmission of ASCII text and bit-mapped images to scholarly workstations over the Internet or other appropriate telecommunications networks. Thus, if a work is in paper format, it could be transmitted to the scholar using telefacsimile technology. If it is already in electronic format, either as ASCII text or as bit-mapped images, it can be transmitted over a telecommunications network directly to the scholar's workstation. At present, microform would still have to be copied and mailed, though new scanning technology is emerging to scan and digitize microforms for electronic transmission.

The network design includes two central computing nodes for storage of electronic data bases, one at the National Agricultural Library and one at Iowa State University. Those nodes would be interconnected to the other participating land grant libraries for online access to those data bases. All participating libraries would be equipped with telefacsimile equipment and workstations.

The Center is based upon a design of distributed responsibility for collecting and making available publications and electronic data. Each library would have a subject specialist in agricultural biotechnology; and each subject specialist would identify materials for purchase or addition to the centralized electronic data bases. This would ensure that at least one copy of important titles or data was being collected somewhere in the United States and that scholars nationally would have access to those titles or data. Members of the Center would be responsible for making those titles or data available nationally to scholars.

Copyright and Licensing Agreements.--Wherever possible, agricultural biotechnology research reports and data produced with public funds and identified as part of the Center collection would be made available to the scholarly community through this network under agreements with the individual scholar, government agency, or institution of higher education. Information from the for-profit sector would be made available under negotiated licensing agreements. Because access to information electronically is a very new phenomenon, the arrangements for making proprietary information available are still negotiated on a publisher by publisher basis. Traditionally published journal articles or books would be made available under the existing copyright guidelines.

THE NATIONAL AGRICULTURAL LIBRARY

The National Agricultural Library has a long history of working with land grant libraries under a series of cooperative agreements. This model of distributed responsibility for collecting has been tried in narrow specialized areas such as arid land, agricultural law, and rural information. Thus, NAL's staff has experience with cooperative collection building and shared reference responsibilities. The National Agricultural Library supports this approach to the area of agricultural biotechnology and has provided Iowa State University, the institution currently managing the National Agricultural Text Digitizing Project under an NAL cooperative agreement, a small planning grant to work with other land grant libraries on refining the network design. That work will be completed in FY90.

THE PAYOFF

The implementation of the Midwest Agricultural Biotechnology Information Center would ensure that:

- Agricultural biotechnology research materials will be acquired by at least one major land grant library and/or the National Agricultural Library and made available to researchers nationally. Given the quantities of information and data required (and its high cost) to support this area of research, no one library can afford to collect comprehensively, including NAL.

- Researchers on each of the Midwest land grant campuses will have the materials for their areas of specialized research available on their own campus or electronically from the electronic data bases maintained by NAL or Iowa State University. This would support creation of centers of excellence in subspecialties of agricultural biotechnology. ISU already maintains some U.S. Department of Agriculture data bases (a soil interpretations data base and a national resources inventory); the biotechnology data base(s) would build on an existing relationship and utilize existing expertise.

- NAL and the individual cooperating libraries would be developing information specialists with subject expertise in agricultural.biotechnology, available to serve researchers in agricultural biotechnology for individual campuses, the USDA, and agribusiness.
- The electronic networking infrastructure between the NAL and the participating land grant libraries would be put in place and serve as a model for other campuses as subject coverage in agricultural biotechnology expands.
- Agricultural researchers in the U.S. would be more competitive with those efforts being made in other countries.

BUDGET REQUEST AND JUSTIFICATION

In order to initate the program for the Midwest Agricultural Biotechnology Information Center Pilot Project, computer facilities at the land grant libraries and the NAL need to be expanded, materials purchased, and staff engaged. The FY91 request for $3.5 million would include the major upgrade of the NAL and land grant libraries' computing facilities, licensing agreements and publications, and operational costs to NAL and the cooperating libraries for the first year of a three-year pilot project. In the second and third years, the computer network, including storage, retrieval, and telecommunications hardware configurations at NAL and the participating landgrant libraries, would be improved further. Continuing operating funds support subject specialists and costs associated with purchasing, cataloging, organizing, and storing publications and electronic data bases. Operating costs should become part of NAL's annual operating budget after year 3 and successful evaluation of the pilot project.

Financial Summary, FY91 - FY93

	FY91	FY92	FY93
Capital Costs:			
NAL computer hardware/software	$1,000,000	400,000	300,000
ISU computer hardware/software	$ 600,000	150,000	100,000
Landgrant workstations and FAX	$ 200,000	100,000	50,000
Operating Costs:			
NAL (4 staff/equipment/travel)	$ 350,000	375,000	400,000
Cooperating libraries (7 information specialists)	$ 350,000	375,000	400,000
Databases & publications	$1,000,000	1,100,000	1,200,000
Project Total	$3,500,000	2,500,000	2,450,000

March 28, 1990

IOWA STATE UNIVERSITY UTILIZATION CENTER FOR AGRICULTURAL PRODUCTS

STATEMENT OF STU HADLEY

Summary of Request

The following pages summarize the progress to date and the future plans for the Utilization Center for Agricultural Products (UCAP). UCAP was established in 1988 to help increase new and high-value uses of farm products, diversify agriculture, stabilize the sector's economy, and improve the U.S. position in domestic and international markets. The Center is designed to respond to the urgent need to improve the marketplace position of American agriculture and stabilize the midwestern agricultural economy by focusing on:

(1) developing new and improved products and processes,
(2) developing markets and innovative strategies, and
(3) transferring technologies to U.S. industries

The Center will integrate the programs of several existing facilities such as the Meat Export Research Center, the Center for Crops Utilization and the Linear Accelerator Facility.

We are grateful for the support this subcommittee has shown for this initiative over the past few years and are hopeful that we will receive adequate funding in FY91 to complete the construction of the facility. ISU is seeking an appropriation of $6.8 million for satisfying construction needs and $1.2 million for operations.

UTILIZATION CENTER FOR AGRICULTURAL PRODUCTS

Increased global competition, combined with the fact that the United States typically produces surpluses of grains and animal products, creates major challenges for American agriculture. And advances in biotechnology will further increase our ability to produce. This is likely to enlarge the discrepancy between production and use of agricultural products and reduce market prices to farmers and processors.

One approach to meeting these challenges is to find new ways to utilize farm production in food and nonfood products.

The United States has focused on the export of raw agricultural products and failed to share in the rapidly growing world market for high-value processed products. Adding value to raw products creates economic activity and jobs. It has the potential to help diversify the agricultural sector, reduce foreign trade deficits, and speed up rural development. And it could produce replacements for imported petroleum products, while creating new markets for U.S. farm commodities.

UCAP's Role

The Utilization Center for Agricultural Products (UCAP) was established in 1988 to help increase new and high-value uses of farm products, diversify agriculture, stabilize the sector's economy, and improve the U.S. position in domestic and international markets.

The center is designed to respond to this urgent need to improve the position of American agriculture by focusing on: 1) developing new and improved products and processes; 2) developing markets and innovative marketing strategies; and 3) transferring technologies to U.S. industries.

The U.S. Congress has recognized the important contribution of these programs by allocating funds for the first and second phases of facilities construction. Also indicative of Congressional support is language found in the FY90 Senate Agriculture Appropriations report, which recommends at least $50 million of the ARS budget be allocated toward new nonfood uses of agricultural commodities—an element of UCAP.

To maintain momentum and avoid losing program opportunities in emerging utilization technologies, additional funding is needed now to complete construction of UCAP facilities and help support start-up operations. Each delay is a step backward as other nations claim a larger share of global markets.

Goals and Early Results

Results of some early programs are highlighted under the following discussion of goals.

Products and Processes

The center will broaden the knowledge base needed to expand the use of raw agricultural materials as food and industrial products. New value-added products will help expand foreign and domestic markets for American agriculture. And innovative processing techniques will improve the competitive position of U.S. processing industries.

•Studies on corn starch in plastic to improve its ability to degrade resulted in three recent patent filings. Ways have been discovered that make starch particles smaller and more compatible with polyethelene—so more starch can be put into plastic without sacrificing strength. Also, polyethylene has been modified to make it more compatible with starch. These processes should strengthen starch-modified plastics and speed up their degradation in the environment.

•Early work on bovine plasma, a by-product of the meat packing industry, resulted in greatly expanded exports of purified plasma for use in food products. More recently, researchers are working to use the plasma as a substitute for sodium caseinate, now imported for use in "veg-dairy" products (creamers, whipped toppings, etc.). The center is helping a processing company located in the ISU Research Park assess the potential of this substitute.

Marketing

Potential new and expanding markets for U.S. agricultural products must be evaluated. The center will conduct economic, marketing, and policy studies to identify new and emerging markets for U.S. production. These studies include cost analysis, market impact, and market identification. Tariffs and other policies that affect foreign trade also will be evaluated.

•In 1988, the United States and Japan signed an agreement opening the door to more Japanese beef imports. An economic analysis of the Japanese position on beef imports by researchers in the meats program of UCAP provided valuable data to policy makers in negotiating the agreement. The changes in market trends, tastes, regulations, and promotional activities that will occur in Japan over the next decade will increase the need for information to help U.S. producers and processors. Center researchers also are continuing their studies to help maintain and expand markets for meat in other Pacific Rim countries.

•The potential to export identity-preserved soybeans to Japan for use as food (tofu, soymilk, miso, etc.) has been assessed. These results have helped an Iowa seed company tap this market. Because of ISU efforts to understand soybean traits that relate to quality of food uses, a Japanese company has decided to locate in Iowa to export a semiprocessed product from specialty beans for the Japanese soyfood industry.

Technology Transfer

Successful transfer of technology and market information to processors, traders, and producers will be emphasized at the center. Pilot plant studies and demonstrations are planned to help convert laboratory studies into practical products and processes. Patent and licensing policies will be designed to encourage cooperation between the center and industry. A technology-transfer team from the center will help businesses apply new technology.

•UCAP's meats program offers nine seminars per year for the meat industry. These courses are attended by about 450 people each year, representing over 300 companies. Courses on exporting meat to the Japanese market are conducted in both Japanese and English, and a week-long summer short course in meats processing technology is offered twice—once in English and once in Spanish.

•A special feature of a recent meats seminar was the presence of Japanese businessmen representing supermarkets, processing companies, trading companies, family and fast-food restaurants in Japan. These representatives discussed importing U.S. products and were available to talk one-on-one with U.S. businessmen.

•Center scientists helped the Iowa Department of Natural Resources plan a demonstration project to evaluate the performance of starch-containing degradable plastic bags for compostable wastes, such as lawn, garden, and shrub litter. Degradation of the modified plastics during composting will be closely monitored to determine if this emerging technology delivers expected results.

Background

The Utilization Center for Agricultural Products integrates the programs of the Center for Crops Utilization Research (CCUR) and the Meat Export Research Center (MERC), which includes the linear accelerator facility. The Iowa Legislature appropriated funds in 1984 to establish CCUR and MERC, demonstrating Iowa's commitment to excellence in agricultural technology. Both programs are interdisciplinary and staffed by faculty from academic departments at Iowa State University.

The linear accelerator facility is being built adjacent to the Meat Laboratory with funding from the Department of Energy and the State of Iowa. This state-of-the-art facility will be used for research programs and demonstrations. Potential benefits are to eliminate pathogenic bacteria and to extend the shelf-life for meats, a particular problem in shipping fresh beef to Japan. The facility is scheduled to be operating in late 1990.

A plan for UCAP was presented to Congress in 1986. Findings of an outside review panel, including representatives of both the private and public sectors, led to initial funding by Congress and establishment of the center.

Facilities Needed

The principal site for facilities construction and renovation is the Dairy Industry Building at Iowa State University. CCUR, located in the Dairy Industry Building, has inadequate and obsolete laboratory and pilot-plant space for research and technology-transfer programs.

Most of MERC's programs will be located in the existing ISU Meat Laboratory, which has physical facilities considered to be among the most modern in the world, and at the linear accelerator facility now under construction.

The new and renovated facilities in the Dairy Industry Building will mainly house pilot plants and laboratories for the crops research program although some laboratories (such as those for sensory evaluation) will be shared with the meats program. Acquisition of crop-processing plants is the highest priority, followed by supporting research (chemistry-type) laboratories and offices for center administration.

An appropriation of $6.8 million in 1991 for the completion of research laboratories is urgently needed. Although acquisition of crop-processing pilot plants, the greatest priority, is well under way, pilot plants are incomplete without research support from the laboratories and facilities for technology transfer. All components—research, applied experimentation, and demonstrations—are necessary for success.

Funding

In FY88, the 100th Congress appropriated $6.375 million to finance the first phase of establishing a national center at ISU, and a plan was submitted to the U.S. Department of Agriculture, Cooperative Research Service, on June 16, 1988. The USDA approved the plan September 2, 1988. The Congress appropriated a second grant of $1.7 million in FY89 and $950,000 for operations. For FY90, a final request of $10 million was sought to conclude the construction of the facility, of which Congress awarded $3.24 million. For FY91, $6.8 million is required to fund the balance. UCAP also seeks $1.2 million for start-up operations to initiate programs in the new facilities.

Total cost for CCUR facilities is estimated to be $16.5 million, and cost for research equipment and pilot plant processing equipment is estimated to be $5.0 million.

The federal grants are targeted for renovation and construction of crops facilities and for purchase of equipment for CCUR and MERC. The Iowa Legislature made a special appropriation of $500,000 toward this program in 1988. The State of Iowa is currently providing $1 million for research programs. Additional state appropriations are being sought to provide a targeted base level of funding of $1 million each for MERC and CCUR. Outside grants and contracts provide approximately $1.4 million in about 75 projects sponsored by commodity groups, industry, federal competitive grant programs, and state agencies.

Development of the linear accelerator facility traces back to 1983 when Congress created a program intended to demonstrate and transfer the technology of irradiating agricultural commodities and products.

In July 1986 Iowa State University entered into a cooperative agreement with the U.S. Department of Energy as a regional sponsor for an irradiation facility for meat and meat products. Funding for the project was expected to be $4 million from the U.S. DOE, and $1 million was appropriated from the State of Iowa in 1988. In March 1988, however, the irradiation facility plans were changed to make the irradiation source machine-generated rather than isotope-generated. This change increased the project cost by $2 million. In 1989, DOE increased its funding by another $0.2 million and another $0.8 million in 1990.

Currently, funding for the project is at $5 million from the U.S. DOE, $1 million from the State of Iowa, and $1 million from Iowa State University. Another $2 million is being sought from the State of Iowa to provide laboratories and offices for the research and technology transfer program. Current and projected support for UCAP is shown in the following table.

	FY87	FY88	FY89	FY90	FY91	FY92
Facilities*						
USDA	$0.05	6.4	1.7	3.2	6.8	0.0
DOE	0.0	4.0	0.2	0.8	0.0	0.0
State of Iowa	6.3	4.2	0.0	0.2	2.0	3.0
Operations						
USDA (MERC,CCUR)	$0.0	0.0	0.95	0.0	1.2	0.0
State of Iowa	0.5	1.1	0.8	1.0	1.5	2.0
Grants/Contracts	0.7	0.6	0.7	1.4	1.4	1.7

* Includes other supporting facilities such as the linear accelerator

New Program Start-up

Funds requested for operations will cover start-up costs to initiate several new programs in both the meat and crops areas. Also, the crops program will need pilot plant operations personnel and a technical transfer specialist to work with businesses interested in adopting newly developed technologies.

Programs being planned for crops utilization include:

- Find ways to increase recovery of feed additives from soybean oil refinery by-products. A company has requested assistance with this problem.
- Develop an understanding of the mechanisms and control of starch biosynthesis so that the types of cornstarch can be altered and thus open new markets.
- Investigate enzymatic methods to reduce the level of cholesterol in foods.
- Study ways to reduce the viscosity of soybean oil to improve its spray characteristics for industrial uses.
- Conduct economic/technology assessments of industrial uses for soy and corn proteins, such as thermoplastics, adhesives, paper coatings, films, and fibers.

On the drawing board for the meats program are several new initiatives, including:

- Develop new processed meat products that have improved nutritional properties and at the same time have acceptable texture and flavor. These products would be substantially lower in fat and salt and higher in soluble fiber.
- Develop surimi-type material from mechanically deboned pork to increase the value of this deboned material.
- Investigate new ways to utilize meat by-products, particularly hair and lungs.
- Develop processes for products that will maintain high-quality characteristics after being pasteurized with ionizing radiation.

Master Plan

The facilities master plan was completed and approved by the Iowa Board of Regents on September 27, 1988. It involves three phases. The three grants already appropriated in FYs 1988, 1989, and 1990 will take care of commitments for phases I and II, and the $6.8 million appropriation requested for FY91 will complete the final phase—phase III.

Phase I: Phase I work consists of two separate contracts. The first stage, on which construction began in April 1989 and will be completed by March 1990, involves renovating part of the Dairy Industry Building to add about 14,000 square feet of modern chemistry laboratories, offices, and mechanical systems.

The second stage (35,000 square feet) in phase I, on which construction began October 1989, is composed of a two-story addition that will house pilot plants and technology-transfer facilities (a theater and some offices) on the first floor. The second floor will be merely roughed in for later sensory laboratories and a test kitchen.

Phase II: Phase II calls for completing the second-floor test kitchen and sensory areas (3,000 square feet) and renovating 4,200 square feet of laboratory and office space. A central lobby area (1,800 square feet) overlooking a historical courtyard may also be constructed.

Phase III: Phase III calls for building a new two-story wing (32,000 square feet) that will house a technology-transfer pilot plant and supporting research and technology-transfer laboratories and for remodeling additional office and laboratory space (14,000 square feet) in the Dairy Industry Building.

Research Program

To expand the crops program, $272,000 was allocated from the 1988 special appropriation from the Iowa Legislature. This, together with operations funding from the Iowa Agriculture and Home Economics Experiment Station and outside funding sources, has made it possible to accelerate studies aimed at meeting the goals of the center.

Outside grants and contracts have grown from about $0.7 million for 20 projects during FY89 to over $1.4 million for 75 projects for the current fiscal year (exclusive of USDA program support). Major grants were received for work on degradable plastics, organic acid fermentation, enzyme modification, genetic engineering of corn, shelf-life of fresh beef, and high-quality beef production.

Payoff

Some exciting prospects are possible from research already in progress and from projected research areas for the next five years. For example:

- New products such as Chinese dried ham; Tonkatsu, a Japanese style pork sandwich designed to provide pork access to the fast food market; BAM, a ham-like product made from beef chuck; and meat-based snack chips and dips all provide new access to and development of foreign markets for meat products.

- Oats are being used in a process for breaking fats down into more valuable components. This uses an enzyme rather than a chemical reactor. A patent application has been filed on the process.

- Rapid methods to detect microbial contamination in meats are being developed. Considerable success has already been achieved on quick detection of pork contaminated with toxigenic fecal bacteria. Methods also are being developed for decontaminating and preserving meat products.

- Alternative crops can yield proteins, oils, starches, and other components with valuable properties for food and industrial uses. An experimental crush of 250,000 pounds of crambe seed provided valuable information on a commercial level. Crambe oil may be useful in plasticizers and lubricant additives. The oil is being evaluated by an oleochemicals company.

- Products are under development at MERC to facilitate a joint venture between a U.S. firm and a Japanese firm. These products will be test marketed as a high-quality branded product in the Japanese market.

- A special line of soybeans developed at ISU is low in the fatty acids that cause rancidity. Oil from an experiment crush of these specialty beans will be refined, and center scientists will monitor performance of this new oil in mayonnaise produced by a local salad-dressing manufacturer.

- Biotechnology promises new crop varieties, making it possible to modify the composition of oil in soybeans and the architecture of starch in corn. Studies to change the functionality of vegetable oils for greater stability can reduce imports of foreign oils and simplify the chemical processes involved.

- MERC economists are assessing the costs of achieving selected maximum levels of food-borne pathogens in the U.S. food supply. Cost-benefit ratios are being determined for controlling contaminants and residues in meat.

- Fermentation of corn starch produces several organic acids that are now produced from petroleum. Propionic acid is a mold inhibitor in food and grain and also is used in plastics. Lactic acid can be used for chemical feedstocks and biodegradable plastics. Noncorrosive acetic acid salts can be used to replace the corrosive salt used to treat roads. Studies on these organic acids produced by fermenting corn starch are in progress.

- The quality of U.S. grains simply does not measure up to some of our competition. One of the results of grain-quality research has been the establishment of the economic value of nutrient composition to the end users of grain. This information, coupled with more descriptive grain-quality standards, is expected to encourage production geared toward specific needs, with resulting higher revenues for producers and processors.

- Center research on the use of enzymes to enhance starch separation during corn wet milling was recognized with a Corn Refiners Association Award. Also, researchers are finding considerable variation in starches, and the differences open up exciting possibilities in utilization. A patent application is being prepared on a new corn variety having unique starch functionality.

- An ISU environmental toxicologist is studying how plastics degrade in the soil and how degradation products move through the soil. This research will help determine if degradable plastics pose a pollution threat.

The Opportunity Is Now

For the first time, the United States is losing its competitive edge. Without new ways to utilize American agricultural production capacity and to increase our competitive position worldwide, our surpluses will only get larger and our presence in world markets will only decline. We need to accelerate efforts to pry open new markets by making a strategic investment now in our agricultural economy. The potential benefits from this increased investment are widespread— improved income for farmers, increased employment in the agricultural sector, and new products for consumers.

We can't afford to back away from technology. Lost program opportunities will result if facilities are not in place soon. This means that the requested $6.8 million for facilities and the requested $1.2 million for program must be appropriated in FY91 so plans can continue in a timely sequence.

LEATHER INDUSTRIES OF AMERICA, INC. AND U.S. HIDE, SKIN AND LEATHER ASSOCIATION

STATEMENT OF JEROME J. BREITER, PRESIDENT, U.S. HIDE, SKIN AND LEATHER ASSOCIATION AND CHARLES S. MYERS, PRESIDENT, LEATHER INDUSTRIES OF AMERICA

My name is Jerome J. Breiter, president of the U.S. Hide, Skin and Leather Association, the trade association representing the U.S. Hide and Skin industry. I am Charles S. Myers, president of Leather Industries of America, representing the U.S. tanning industry.

We appreciate the opportunity to present this statement to the Committee.

We represent the combined membership of the U.S. Hide, Skin & Leather Association and the Leather Industries of America. Our message is in support of the research program for hide and leather which is carried out by the Agricultural Research Service's Eastern Regional Research Center in Suburban Philadelphia. The work being done there is vitally important to both of our industries.

We have brought a similar message to this Committee previously and that has been to restore some of the funding for those programs which was reduced several years ago because of a shift in priorities. Ten years ago the hide and leather research program had a budget of $2 million. Currently the funding level is at $1.27 million, up from $1.15 million in 1989. This reduction despite the 1990 modest increase has hindered a program which has been unable to keep pace with the needs of the industry.

And yet we believe we can proudly say that the hide and leather research program has been one of the more successful programs of the ARS. Let us list just a few of the developments that have come from the research done previously at ERRC:

- **Gluteraldehyde tanning — washable shearlings**
- **Processing to the blue, centrallized near hide sources**
- **Genetic cause of vertical fiber defect (Hereford)**
- **Reactive dyes, washable, dry-cleanable (commercialized)**
- **Comminuted collagen from lime splits (commercialized)**
- **Activated sludge for tannery effluent treatment**
- **Pilot scale continuous beamhouse (through unhairing)**
- **Short-term hide preservation with sulfite/acetic acid**
- **Study of obstacles of using pigskins for leather**
- **Determination, elimination of tannery notrosamine source**

Some of the current program thrusts of hide and leather research are the following:

- **Hide Preservation**
    - **Use of electron beam irradiation to preserve hides**

  - Brine curing studies
    - Brine penetration rates
    - Extraction of hide components by brine
    - Damage to hides by "Halophilic" bacteria
  - Hide damage to sheepskins caused by automated pulling

- Waste Utilization during Hide Processing
  - Enzymatic process to degrade hide fleshings
  - Use of magnesium sulfate as ammonia-free deliming agent
  - Unhairing with sulfide alternatives
  - Enzymatic process to recover chrome from chrome shavings

- Role of Noncollagenous Components in Hide Structure
  - Binding to collagen
  - Persistence through the leather-making process
  - Effect on mechanical and chemical properties of leather

- Novel Tanning Chemistry
  - Chemical modification for enhanced chrome uptake
  - Use of chrome alternatives
  - Novel synthetic crosslinking agents

We think you will agree that these represent an ambitious and varied program that is really demonstrating how to get the most from the modest funding allocated.

Restoration of $800,000 in research funds will enable us tomove ahead in three areas of enormous practical value.

1. Chrome Tanning Alternatives: Utilizing newly-available computer modeling techniques to define precisely the molecular mechanism of chrome tanning as the basis for empirical studies of new tanning agents (that are ecologically and environmentally compatible).

2. Enzymatic Degradation of Solid Tannery Waste: A breakthrough — a true discovery — was made last year on the use of enzymes to render environmentally harmless chrome-bearing solid waste. Much laboratory work and field work lies ahead to perfect this technology for general adoption.

3. Hide Preservation: Gains have been made utilizing electron beam irradiation as an alternative to brine curing. Yet to be determined is the evaluation of such cured hides as a leather raw material.

These top priority, practical objectives can be accomplished by the addition of $800,000 in research funds.

In conclusion we would like to add a word about the industries affected by this request.

Of particular value to our nation's welfare is the success our respective industries — hide and leather — have gained in the export arena. Astoundingly, 50% of the $4 billion in shipments is exported, a percentage that has been on the increase in recent years.

Gains in the export column, however, were necessitated because of a long-term erosion of the domestic customer base. The hide industry supplies the tanning industry and the tanning industry provides sheet leather to the manufacturers of finished goods, such as footwear, garments and handbags. Unfortunately, most of the manufacturing of these finished goods now occurs overseas - dictating an export-or perish survival strategy for the affected U.S. industries.

With the demise of our domestic customer base there has been severe contraction within our industries and the major casualty has been the loss of the research and development infrastructure supporting our efforts. We have long come to rely on the services and programs provided by the ARS effort at the Eastern Regional Research Center. In many areas this is the only research mechanism available to our industry that enables us to remain competitive in a global sense.

It is for these reasons that we respectfully request that the funding level be restored to the former $2 million level in order that these important programs continue.

LEOPOLD CENTER FOR SUSTAINABLE AGRICULTURE

STATEMENT OF DENNIS KEENEY, DIRECTOR

Mr. Chairman and members of this Subcommittee, I am Dennis Keeney, Director of the Leopold Center for Sustainable Agriculture at Iowa State University, Ames. The Leopold Center is a state funded center that directs competitive grant research, interdisiciplinary research, and outreach in sustainable agriculture. I welcome the opportunity to testify to the need for funding a National Training Program in Sustainable Agriculture through the U.S. Department of Agriculture Extension Service.

There are many technologies available today that could, if properly packaged in systems adapted to the farming community, markedly reduce dependence on agricultural chemicals. Further research, such as that being done with the Leopold Center, will soon be available to enhance the effectiveness of these packages and bring even more efficient resource enhancement and enviromental protection to the farm enterprise.

Many of these technologies are either on the shelf or in the minds of the researchers and farmers. The Training Centers will make these packages available in usable form to extention agents and specialists, SCS personnel and agricultural consultants and dealers.

In the past we have relied on research - extension - private industry partnerships to transfer best management practices to the users. The system concepts of sustainable agriculture are far more complex to teach and require farmers to help transfer the knowledge. I feel only a concerted approach as offered by the Training Centers can assure that these new technologies will be adapted to teaching at the farmer level by those most qualified to reach the farming community.

I am most appreciative of the LISA initiative and the much needed increased funding. It is now time to expand on LISA by ensuring that technology is developed into teachable materials and transferred effectively to the farming community.

Thank you. I am willing to respond to questions or comments.

Dennis Keeney
Director
Leopold Center for Sustainable Agriculture
126 Soil Tilth Building
Ames, Iowa 50011
515-294-3711

MIDWEST PLANT BIOTECHNOLOGY CONSORTIUM

STATEMENT OF DORIN SCHUMACHER, EXECUTIVE DIRECTOR

Mr. Chairman, thank you for the opportunity to testify. My name is Anthony Cavelieri and I am the Director of the Department of Research Specialists, Plant Breeding Division, at Pioneer Hi-Bred International, Inc. Pioneer Hi-Bred is the largest seed company in the world, and is based in Des Moines, Iowa. I am speaking on behalf of the Midwest Plant Biotechnology Consortium, of which Pioneer Hi-Bred is a member.

In its appropriations act for fiscal 1989, the Congress appropriated $1.75 million for the biotechnology research and technology transfer program of the Midwest Plant Biotechnology Consortium, an industry-university-federal laboratory consortium. Then for fiscal 1990, Congress appropriated $2.625 for the Consortium. On behalf of the Consortium's 31 corporate members, and 20 member university and research institutes, I express our appreciation for your support. We have submitted a management proposal for the use of the 1990 funds to the USDA, and expect approval soon. Officials of the Department have been most helpful and cooperative.

Plant biotechnology has the potential for invigorating and diversifying the agricultural economy. The goal of the Midwest Plant Biotechnology Consortium is to bring together industry, universities, and federal laboratories to conduct research in plant biotechnology to 1) utilize agricultural products as new sources of chemicals, pharmaceuticals, and energy; 2) reduce the cost of crop production; 3) improve utilization of existing crops; and 4) develop an agriculture that is safer in its impact on the environment.

The concept behind the Consortium has been enthusiastically supported by industry, universities, and federal laboratories alike. All parties involved see new technology as a key component in the success of American competition in global agribusiness.

The commitment of industry to the Consortium's work can be seen easily by its allocation of funds for the excellent innovative research projects started in 1989. The matching of federal money with industry funds signifies an appreciation by both parties that the program works and benefits everyone. The companies that have made financial commitments totaling over $700,000 to the 1989-1990 Consortium research program include Abbott Laboratories, Dow Chemical Company, DowElanco, E.I. DuPont, Eli Lilly and Company, Lipha Chemicals, Monsanto Company, Native Plants, Northrup King Research Center, Novo Laboratories, Pioneer Hi-Bred International, Inc., Quaker Oats Company, and Rohm & Haas. Four companies have contributed to two or more research projects. These corporate commitments increase the effectiveness and impact of federal research dollars. The continued cooperation of industry and the federal government in this program will contribute to the economic strength of agriculture in the United States.

State governments and private foundations have also been very active in supporting the Consortium research and technology transfer program, and have made financial commitments of over $1 million to the Consortium projects initiated in 1989.

The total funding from all sources for the Consortium's 1989-1990 research and technology transfer program is $3.5 million, including the $1.75 million USDA appropriation.

As a result of company interactions with academic scientists at Consortium-sponsored meetings, many companies have established on-going dialogues with university and federal laboratory scientists. Some of these have resulted in funding for additional plant biotechnology research projects. The Consortium encourages and facilitates these interactions. These spin-off projects further leverage the federal funds of the Consortium.

In 1989, 15 research projects were funded through the Consortium. Nine projects deal with diseases and pests which reduce crop productivity. These projects are designed to lessen crop losses and reduce the amounts of agricultural chemicals used to fight pests. Reduced dependency on agrichemicals will improve the environment in areas such as ground water. The reduced chemical use should also decrease farmers' crop production costs.

Two Consortium projects involve investigating modifications to industrially useful enzymes. This research will help expand markets for crops by improving the efficiency of making high-fructose corn syrup. It could also increase the quantity of industrially important enzymes in crops.

Four projects are for gene mapping or gene transfer in agricultural plants. This research seeks to improve the nutritional value of crops and other critical traits and to understand better the basic genetic processes in crops grown in the Midwest.

The Consortium is the organizational mechanism that links players in plant biotechnology and coordinates their functions in order to bring about the efficient transfer of new knowledge and new technologies from the laboratory to the marketplace. The program is relatively young, but has received high marks by both industry and universities since its inception. The benefits derived from the work of the Consortium will not be realized unless the research progresses to the point where new projects and processes can be tested in the field. We urge Congress to continue to support the program's contributions to the future success of American crops and to the United States' position in the global marketplace. Agricultural exports continually show a positive trade balance.

The fiscal 1990 appropriation of $2.625 million will be used to continue existing projects for a second year and to start new projects. A rigorous review and competition for new projects is already in progress.

We are here to thank you for the support you have provided in the past, and to request that the appropriation to the Consortium be increased to $5 million so that the research program can grow and so that current projects can be continued. Speaking on behalf of my industrial colleagues, we feel that the Consortium's program is critical in helping to keep United States agriculture competitive in global markets.

Thank you very much for this opportunity to testify.

MIDWEST WATER RESEARCH COALITION

STATEMENT OF DR. RICHARD L. LOWER, ASSOCIATE DEAN, COLLEGES OF AGRICULTURE AND LIFE SCIENCES, UNIVERSITY OF WISCONSIN

My name is Richard L. Lower. I am Associate Dean and Director of the College of Agricultural and Life Sciences at the University of Wisconsin-Madison. I represent a Research Consortium of Midwestern Universities investigating water quality. The Universities are: Wisconsin-Madison, Minnesota, Iowa State, Purdue, Indiana, Missouri and Ohio State. We are seeking additional funding on a regional basis to complement research and education initiatives presently underway to assess ways to minimize surface- and ground-water quality deterioration due to contamination from agricultural use of chemicals; pesticide container disposal; on-site waste disposal; and from landfill sites operated in rural areas. It is intended to expand the consortium to include universities throughout the Great Lakes, Upper Mississippi and Ohio River Basins; the final grouping would encompass: Minnesota, Iowa, Missouri, Wisconsin, Illinois, Indiana, Michigan, Ohio, New York, Pennsylvania, West Virginia and Kentucky. The University of Wisconsin System would bring leadership and management to the program. The research/education program would depend on close ties being developed between the universities, research and education foundations, industry, state and local governments, environmental activist groups and the USDA through its Agricultural Research Service, Economic Research Service, and the Cooperative Extension Service. The region is located in a highly productive agricultural area with a sufficiency of available water but with an increasing deterioration in water quality. The water quality issue is fraught with public emotion throughout the area particularly with regard to the human health risks associated with contaminated water. Some states have surged ahead, with WI at the forefront, to enact independent groundwater quality protection legislation, sometimes with little consideration for the impacts on farming and state economies. The universities should be a conduit to ensure that the best science is brought to bear on the decision-making process. The final outcome, if this proposal is funded, should be the development of policy alternatives for a variety of water-quality issues which include assessments of the merits and disadvantages of each alternative. The effort should be buttressed by a strong public education program based on development of educational materials comprehensible to a diversity of audiences. Our goal is a program to complement ongoing midwest initiatives on water quality by bringing the issues to the forefront in policy and regulatory decisions.

The current Midwest Water Quality Initiatives contain three major efforts in research and education: 1. A program to evaluate the effects of agricultural management on water quality in several small subbasins which have specific problems related to the soils and geology of the area; 2. a research grants program which is funded at a low level--266 projects were prepared in 1989, of which only 46 could be funded; and 3. an outreach program which involves implementation of agricultural management practices on two watersheds in the region--sites in Wisconsin and Minnesota--where no funds were provided to monitor the before-and-after effects of the different management practices. These three initiatives are worthy programs in their own right, but do not go far enough in the interpretation of data to give it policy applicability. Our proposal is to enhance them so that science will be brought into the decision-making process through a region-wide, multidisciplinary research program combined with strong information dissemination/technology transfer linkages.

The proposal is to devise and conduct a five-year research/technology-transfer program that will have immediate and long-term benefits for agriculture, industry and the environment in a region encompassing the Great Lakes, Upper Mississippi, and Ohio River Basins. Specific objectives will be to:

- o Obtain federal support in FY 1991 for a Midwest Water Research Coalition that will include representatives from state and local governments, research universities, agriculture, industry, and environmental groups.

- Promote and support research on Midwestern water resources that will describe and analyze the chemical, physical, and biological processes which control the transport, transformation, and fate of chemical contaminants and to evaluate their toxicological significance.
- Devise strategies for pollutant reduction and detoxification.
- Develop analytical models and tools that will enable public officials to assess water-related environmental risks.
- Establish a region-wide committee of natural and social scientists and public officials that will evaluate proposed public policies for regulating the use of agricultural chemicals and waste disposal on the agricultural and industrial economies of the Midwest.
- Disseminate water quality information throughout the region to farmers, the general public, state and local government officials, agency administrators, industrial representatives and environmental groups using documents, lectures, town meetings, video tapes, maps and demonstrations, etc.
- Develop mechanisms for transferring technology from research findings in one region of the country to other climatic, geologic, and geographic settings.

These objectives complement and are totally compatible with the ongoing midwest initiatives. For example, the site evaluations for a variety of soil and geologic settings will provide the desperately needed data base on which to validate the predictive models mentioned in the objectives. These models must be capable of making thousands, even millions of decisions on the effective use and control of agricultural chemicals on a compound-specific, site-specific basis. To date, the data base on chemicals reaching water has been inadequate to the task of developing a clear understanding of chemical transport through soils to groundwater and overland to surface water, validation of the models themselves, and prediction of the rates of chemical transport under various management and climatic conditions. States have set or are currently setting standards for agricultural chemicals in potable water. The models must be capable of predicting whether the standards will be violated under certain combinations of climatic, geologic and management conditions. In areas where farmland is vulnerable to chemical transport, alternative but innovative management techniques are urgently needed, as well as criteria and methods to judge their efficacy.

To determine whether "best management techniques" are indeed appropriate we must devise effective sampling and monitoring protocols with a firm statistical base which will tell us over the long term which management strategies are most effective. The proposal contained herein would be useful in developing statistically sound evaluation techniques capable of irrefutable proof that particular practices are successful. Each management technique must be judged on its merits, i.e., whether it is capable of sustaining adequate agricultural production with a just profit to farmers while enhancing environmental values. These criteria of management success must be stringently evaluated if farming is to show optimal returns.

Two other sectors that contribute to deteriorating water quality in rural environments are on-site sanitation facilities and waste disposal by landfilling. Little is known about the forms and amounts of nitrogen which reach groundwater from septic tanks. Speculation is rampant that substantial nitrate contamination of groundwater is derived from septic tanks, but little research has been conducted on transformations of nitrate to gaseous products in the lower horizons of soils. If current speculation is not countered by scientific investigation, then the size of housing lots containing single- or multiple-dwellings with on-site waste disposal systems will have to increase enormously, say from ¼-acre to 3-acre lots for single dwellings. This would increase urban sprawl and decrease the availability of high-quality farmland. These questions must be carefully researched to determine the real impact of septic tanks on groundwater quality. We also need a method for more rapidly determining when a septic system is likely to fail. Incursions of nutrients into waterbodies resulting in eutrophication of streams, rivers and lakes must be avoided. The transmission of microbial disease vectors by these failures is intolerable.

Rural areas are frequently the setting for landfill sites, and techniques used for waste disposal are positively archaic. A major problem in industrialized societies is the proper, safe and long-term handling of wastes and disposal through landfills, usually located in the rural environment. Waste disposal in landfills impacts everyone because all are direct or indirect waste generators and many suffer from the economic and health impacts of improper waste disposal. Clearly, waste minimization, reduction and beneficiation should be actively pursued; however, complete elimination is simply impossible. Therefore, construction of secure waste disposal sites with containment and collection of waste effluent that cannot be treated or until it can be treated becomes an important issue in evolving innovative management tactics. Waste containment systems currently include bottom liners, sideslope liners, covers and vertical barriers, and utilize earthen materials and geosynthetics. The purpose of these waste barriers is not merely control of water seepage: They must also restrict the escape of hazardous substances such as pesticides or volatile organic compounds in solution or in the vapor phase. Laboratory and field experience shows that some chemicals can affect the structural integrity of the most widely used liner material--soil. Hydraulic conductivity and its susceptibility to change with time or exposure to chemicals are factors impacting use of clay in waste-containment barriers. The current data base comprises mainly test results for simple monochemical systems and test programs that have extended over short time periods relative to the active life and post-closure security periods for most waste-containment and storage facilities. Research in multichemical systems is urgently needed with respect to suitability of barriers to waste leakage.

Waste containment technology in landfills is in dire need of innovative approaches to bring about another generation of barriers. Economic and construction factors are often limiting in this respect. The feasibility of using improved designs and new materials as a substitute or amendment for soils needs to be investigated. The constructibility of liners, their cost-effectiveness, their interaction with mixed chemical systems, their performance in field circumstances, and the effects of time are significant research elements. Development of technologies for rapid detection of leakage and use of technologies such as reverse or electro-osmosis to concentrate contaminants or control solute transport across barriers are items of immediate concern.

Reliable toxicological assessments of chemicals in water are urgently demanded. The Federal Water Quality Act of 1987 first addressed the issue of toxicants in surface water at the national level and required that all states --under the guidance of the US-EPA--create standards or procedures for deriving criteria for individual toxic substances defining maximum permissible ambient concentrations in various categories of surface water. The legislation required states to promulgate rules and regulations to ensure that appropriate ambient water quality criteria for toxic substances be maintained. To this end, the states should regulate the input of individual toxic compounds from industrial and municipal sewage treatment plants by means of National Pollutant Discharge Elimination System (NPDES) permits. It allows states to create standards to safeguard against acute and chronic toxicity in receiving waters towards fish, other aquatic species, and even aquatic plants important for fish/aquatic organism habitat, as well as waterfowl and wildlife relying on the affected water for drinking and as sources of food. Beyond this, criteria must establish adequate protection for humans and domesticated animals using the water as sources of drinking water or fish for consumption. The contaminant level must preclude unnecessary risk of mutagenic, teratogenic, carcinogenic, neurological or immunosuppressive effects. Derivation of responsible criteria and control measures, which guarantee adequate levels of human and animal health and environmental protection, without undue social and economic stress on dischargers and the communities or industries they service, becomes an extremely complicated task requiring input from many scientific and technological disciplines.

Research is needed to determine the costs of water quality impairment along with associated legal and intergovernmental policy questions, e.g., estimates of costs of relocation, alternative water supplies, and remediation alternatives. Investigations must focus on developing new mechanisms of financing plausible policy options. This requires economic analysis of costs and benefits, especially as related to health issues. Economic evaluations of pollution impacts and costs of remedial actions are vital. Given the large social costs, measurement difficulties and human dislocations involved, indications are that management should largely be geared to finding protection strategies. In a more specific context, policy research should focus on development and testing of innovative management practices and policy instruments as they relate to source reduction and, as appropriate, transport mechanisms. In each instance economic evaluations are critical. To facilitate such inquiry, scientific research results should be translated into policy parameters applicable to state and local government intervention. These investigations should be linked to technology transfer and outreach activities. Analyses of existing programs will guide new policy implications and impact assessment.

Research is needed to develop a scheme of information and technology transfer on chemical impacts on water quality, and to facilitate its dissemination to a diversity of groups. Specifically it is necessary to: 1. Utilize an advisory council--in conjunction with program staff--to define and prioritize those resource areas requiring reevaluation by providing and disseminating alternative management schemes; 2. mount an information retrieval system on water resource management including scientific, technical, health, legal, social, economic and political considerations; 3. identify information gaps and research needs and conduct the research necessary to allow rational development of resource management alternatives; 4. delineate alternative land use/management schemes and discuss the advantages and disadvantages of each; and 5. train students, technicians and leaders in the important elements of the research, information and technology transfer programs. Concomitantly, a student training scheme should be instituted to make the greatest use of the broad scope of expertise developed by both the research and technology transfer program.

A significant broadening in interdisciplinary education on water is needed and can be achieved through employment of undergraduate students as hourly workers or interns on research projects. These involvements bring extremely valuable insights to young students who have never confronted the complexity of environmental issues in the real world and who may redirect their energies and future professional involvements towards water quality problems. Graduate students working toward advanced degrees and post-doctoral researchers become part of the critical pool of professionals to fill positions in universities, government, industry, and private and public research institutes. Students at all degree levels should be oriented towards career positions, especially those in the public sector where the need is greatest.

To be effective, each research initiatives must be placed into a regional and eventually national context. The proposal requests additional federal funding to complement ongoing initiatives in the midwest and other parts of the country which cannot be addressed with present funding levels. It is urgent that we get sound, scientific advice from the research community into the nation's decision-making procedures on water quality issues; in this way we can avoid the potential blunders caused by making decisions on a purely emotional basis.

The fiscal note accompanying this request would be for $5 million of funding in FY 1991 with an annual incremental increase of 10% for the succeeding four years. In time, this model could be replicated in other regions of the country.

MOBAY CORPORATION

STATEMENT OF HEINZ K. WEHNER, EXECUTIVE VICE PRESIDENT AND GENERAL MANAGER

The Honorable Quentin N. Burdick, Chairman
Senate Appropriations Committee
Subcommittee on Agriculture, Rural
Development and Related Agencies
140 Dirksen Senate Office Building
Washington, DC 20510

Dear Senator Burdick:

As a member of the Coalition for Advancement of Research on Agriculture, Food and Environment, Mobay Corporation submits this letter as written testimony in support of the National Initiative for Research on Agriculture, Food and Environment, and respectfully requests that this letter be included as part of the hearing record developed by your Committee.

As a basic manufacturer of agricultural pesticides, we are committed to production-related research which will continue to keep America strong and competitive in the world agricultural market.

Agricultural technology in America has made miraculous advances over the past sixty to seventy years. We must not let the commitment to continued advancement falter. The need to increase funding for research on agricultural production of food and fiber is critical for our country, if it is to advance technology and keep abreast with a rapidly expanding population, both at home and abroad.

Increased productivity through advanced technology is also necessary for the United States to maintain a strong balance of trade internationally. Only a strong research base will permit our country to keep its competitive edge in the international market place.

Mobay also is supportive of the research initiative to maintain our present safe food supply. As citizens and consumers, we too are concerned about environmental quality and a safe and nutritional food supply. We realize the concern of others in this area and support current regulatory guidelines to maintain our environment and human safety. Continuing advances in technology will enable us to continue to strengthen our agricultural base; however, in doing so, we must always be conscious of and support parallel research efforts to assure that our technology is compatible with a safe food supply and environmental quality.

We apprciate the opportunity to support the National Initiative, and request that your committee take appropriate notice of our supportive position in this matter.

Yours very truly,

MOBAY CORPORATION
AGRICULTURAL CHEMICALS DIVISION

Heinz K. Wehner
Executive Vice President
and General Manager

NATIONAL ASSOCIATION OF STATE DEPARTMENTS OF AGRICULTURE

STATEMENT OF JAMES B. GRANT, EXECUTIVE SECRETARY

Summary of Request:		(millions)
Food Safety Initiatives:		
Agricultural Marketing Service		15.8
National Agricultural Statistics Service		7
Economic Research Service		1.2
Human Nutrition Information Service		1
Agriculture Quarantine Inspection		75
Pseudorabies		12.7
Imported Fire Ant		4.2
Pink Bollworm		1.3
Grasshopper and Mormon Cricket		8.5
Russian Wheat Aphid (per year for 10 years)		9.5
Boll Weevil		12.8
Animal Health Compliance Enforcement		14.6
Import-Export Inspection Program (appropriated funds only)		9
IR-4 Program - Stable and sufficient funding		
Agricultural Marketing Service:		
Payments to States (Federal-State Marketing Improvement Program)		1.8
Wholesale Market Development		3
Federal Seed Act		1.094
Economics and Statistics		140.3
Economic Research Service	56.5	
National Agricultural Statistics Service	81.4	
World Agricultural Outlook Board	2.4	
Soil Conservation Service		728
Food Safety and Inspection Service		442
Grants to states under FSIS State Meat & Poultry Inspection Program		38.5
Foreign Agricultural Service		115
Targeted Export Assistance		325
Export Enhancement Program		1000
Food and Drug Administration		5.4

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Mr. Chairman and members of the Subcommittee, I am J.B. Grant, Executive Secretary of the National Association of State Departments of Agriculture. I am pleased to make this statement on behalf of our Association.

NASDA represents the Departments of Food and Agriculture in the fifty states and the U.S. territories of Guam, American Samoa, Puerto Rico and the Virgin Islands.

Cooperative Programs

NASDA and the state Departments of Agriculture have worked cooperatively with various agencies of the U.S. Department of Agriculture for many years. And our teamwork has paid off. Cooperative programs, jointly funded and jointly administered, are a cost-effective way of carrying out necessary government programs. They have proven successful and efficient over the years. We believe they must continue on a cooperative basis. However, some very important programs have been slated for drastic reductions or the imposition of user fees. Most of these programs are federally-mandated, consumer protection or service programs, many carried out cooperatively with states and industry.

The Administration tries to justify the cuts or user fees by saying that the states and/or industry will absorb these programs. This will not happen. The states and industry are in no condition to pick up these programs, nor should they have to assume total responsibility for federally-mandated programs. We respectfully request that Congress appropriate adequate and sufficient monies that will continue to allow the U.S. Department of Agriculture to fulfill its mandated obligation to American farmers, ranchers and to all American citizens.

Food Safety

NASDA is delighted that the Administration is placing an emphasis this year on food safety. We have been working closely with the Department of Agriculture, the Environmental Protection Agency and the Food and Drug Administration in an effort to establish a National Council on Food Safety that would ensure continued consumer confidence in the nation's food supply. We hope to have this Food Safety Council in operation soon.

We agree completely with the Administration on its new food safety initiative for FY 1991, including new monies for the Agricultural Marketing Service ($15.8 million), National Agricultural Statistics Service ($7 million), Economic Research Service ($1.2 million) and Human Nutrition Information Service ($1 million). I will be discussing these departments in more detail later in my testimony.

Agriculture Quarantine Inspection

As in Fiscal Year 1990, the Administration is again calling for total user fees in FY 1991 to fund the Agricultural Quarantine Inspection program. This would mean a shift of $75 million from appropriated funds to user fees. This would be an unprecedented move for this APHIS program. Although the user fee would be imposed on international travelers, we believe the subcommittee should carefully examine this proposal, as it did last year, before imposing user fees on a federally-mandated program. This user fee precedent could set a bad example and thus open the door to indiscriminate use of such a fee.

Pseudorabies

States, industry organizations and individual herd owners have been working with USDA for the past five years to eradicate pseudorabies in the United States. Although we have reduced the disease during this time, our work remains incomplete. For Fiscal Year 1991, USDA is proposing to reduce pseudorabies funding by $200,000 to approximately $3.1 million. We believe this is not justifiable. NASDA has been working closely with the National Pork Producers Council on this matter and agrees that a substantial increase in funding is necessary for a comprehensive eradication program. We therefore urge the subcommitee to make $12.7 million available in FY 1991 to begin carrying out a 10-year eradication program.

Imported Fire Ant

The Imported Fire Ant continues to plague many of our farmers, yet the Administration is urging a reduction of nearly 65 percent from last year's current estimate. We believe a minimum of $4.2 million in FY 1991 is necessary to control these dangerous pests.

Pink Bollworm, Grasshopper and Mormon Cricket

Three other important programs, Pink Bollworm, Grasshopper and Mormon Cricket, have been targeted for reductions in FY 1991. The reductions would be disastrous for these programs. We urge you to continue at no less than the current estimated funding of Fiscal Year 1990--$1.3 million for Pink Bollworm and $8.5 million for Grasshopper and Mormon Cricket.

Russian Wheat Aphid

Again, this year, we strongly recommend that appropriated funds be allocated toward eradicating the Russian Wheat Aphid (RWA). This aphid is a very serious problem, one for which there is no short-term solution for wheat and barley growers in the southwest and west. If left uncontrolled, it can virtually destroy a major part of the Western wheat crop, to the detriment of our already hard-pressed farmers.

The Russian Wheat Aphid is an invading pest of wheat, barley and other small grains currently in 17 states (Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Texas, Utah, Washington and Wyoming) and in Canada. This pest has become a significant economic threat to agriculture, affecting wheat and barley. RWA can cause up to 70 percent yield losses in some areas. Yield losses and control costs exceeded $52 million in 1987, $120 million in 1988 and $130 million in 1989. Estimates of future damage are even greater as the pest becomes established and environmental conditions change to enhance severe aphid infestation.

In 1988, under the auspices of NASDA, a strategy, entitled the "National Russian Wheat Aphid Integrated Pest Management Program" (NRWA-IPM) was developed to reduce the economic losses in wheat, barley and other small grains caused by the RAW. We supplied members of this subcommittee with copies of a report on this program last year. An updated current report is attached for your use. A maximum redirection of resources has been made by both federal and state agencies, yet resources are inadequate to address this monumental pest problem in a holistic approach and timely fashion. An immediate need exists to implement the NRWA-IPM program.

In 1989, the Russian Wheat Aphid Technical Advisory Group determined that $9.5 million per year for 10 years is needed to implement essential components of the NRWA-IPM program. We supported this recommendation then, and we support it once more. Although the FY 90 appropriation allowed for partial implementation of research, an appropriation at the requested level for FY 91 is essential for timely development of control measures. A National Russian Wheat Aphid Steering Committee has been formed, as directed by Congress. This committee will provide cooperation and oversight for the U.S. Department of Agriculture and state programs.

Although we are aware of the severe budgetary restraints facing our country, we believe this appropriation would, in the long run, save American taxpayers hundreds of millions of dollars and perhaps save the wheat industry.

Other APHIS Programs

The Administration also is calling for reduction in other APHIS programs that we consider very important to agriculture. We therefore ask that you increase funding for the boll weevil program in FY 1991 to the current 1990 estimate of $12.8 million, $3 million above the Administration's request. For the Animal Health Compliance Enforcement program, we urge an appropriation of $14.6 million, approximately the same as the current estimate of $14.5 million. In addition, we support $9 million for the Import-Export Inspection program in appropriated funds only. We disagree entirely with the Administration's request for $2.2 million in user fees for this federally-mandated program. However, we support the Administration's request for $32.1 million for the Animal Damage Control program, an increase of $2.7 million over FY 1990.

Integrated Pest Management

Mr. Chairman, in regard to the various APHIS programs, NASDA urges that Integrated Pest Management be used as often as possible. We believe IPM is a good approach to ensure a healthy environment while, at the same time, keeping U.S. agriculture competitive. IPM is based upon sound biological and ecological principles. It is a pest populatin management system that uses all suitable techniques, such as natural enemies, pest resistant plants, cultural management and pesticides in a total crop production system to anticipate and prevent pests from reaching damaging levels. Equally important, IPM programs have a 15-year track record of siginficantly reducing pesticides and increasing net profit for American agriculture, while maintaining quality and yield. We urge continued Congressional support for these programs and sufficient monies to carry out expanded research and development.

IR-4 Program

IR-4, the national agricultural program for the clearance of pest control agents and animal drugs for minor uses, receives approximately 90 percent of its current operating budget of $2 million from PL 89-106 (Cooperative State Research Service Special Grants) funding. The Administration has recognized the need for an increase in funding for IR-4 and has proposed an increase of $1 million. However, this token addition does not approach the funding levels needed to provide IR-4 with the resources to meet the challenge of pest management on minor use crops. IR-4 needs stable and sufficient funding each year to (a) eliminate a backlog of 1200 priority potential pesticide clearance projects on food uses; existing funding permits completion of about 120 projects per year while IR-4 receives around 200 new requests per year. (b) maintain approximately 1000 key minor uses that may be lost in the next seven years during reregistration mandated by FIFRA 88, (c) properly fund research to establish biorational pest control agents for IPM compatible pest management practices on minor crops, and (d) reestablish the research to support pesticide registrations on ornamental commodities. We urge the subcommittee to establish proper stable funding for IR-4 to allow this program to operate effectively.

Agricultural Marketing Service

In my introductory remarks, I mentioned the Food Safety initiatives proposed by the Administration in which we concur. One of those initiatives includes $15.8 million for the Agricultural Marketing Service to administer a national pesticide residue monitoring program. AMS would enter into contracts with states to sample and test commodities within market distribution channels for pesticide residues. States with the highest production of fruits and vegetables would be encouraged to participate in 1991. NASDA believes such a program would greatly benefit the consumer and urges the subcommittee to fully fund this program at the requested level of $15.8 million.

We are very pleased that the Administration has requested funding for Payments to States program, the Wholesale Market Development program and the Federal Seed Act in FY 1991. It has been the practice of previous administrations to zero out funding for these programs. We believe these programs are necessary to support the overall basis of agriculture and have always maintained a vital cooperative endeavor.

We respectfully ask that the Payments to States program (Federal-State Marketing Improvement Program) be funded in fiscal year 1991 at $1.8 million, an increase of $550,000 from FY 1990. Thus far in FY 1990, 13 projects in six states have received grants totalling approximately $618,000. It is our understanding that additional projects will be funded in July and September. We applaud the subcommittee's continued interest in this valuable program. We believe these monies are effectively used by the states and the monies are matched by the states.

Another important program for states is the Wholesale Market Development program. We urge the subcommittee to fund this program at $3 million in FY 1991, $1.3 million over the amount requested by the Administration. We believe additional resources are needed to partly compensate for past inflationary erosion of the program's support base and to provide the additional means to address urgent research into maintaining efficient wholesale food marketing in our major urban and rural areas.

The Federal Seed Act was designed in part to ensure quality and prevent mislabeling of seed in interstate movement. We believe funding to support the Federal Seed Act is vital since states do not and cannot control interstate shipments on sales of seed. If seeds do not meet proper standards, the buyer has no recourse other than litigation. Not all states have strong or "powerful regulatory tools." The Federal Seed Act serves to balance these deficiencies between states. As is the case with many programs, the Federal Seed Act should be a strong base and support for individual states programs, which can be used by the states when necessary. Many states have small seed producers who, because of the recognition of the Federal Seed Act of the United States, are able to participate in and sell seed in the international market. They are able to do so because the foreign countries recognize the Federal Seed Act of the United States as the dominant program.

The Conservation Reserve program (CRP) has significantly increased the purchase of seed from out-of-state producers in many states. Complaints about the quality and mislabeling of seed have also risen significantly. For these reasons, we very much need federal assistance to ensure compliance with the Federal Seed Act. Therefore, we urge you to appropriate $1.094 million in FY 1991 for the Federal Seed Act, the same amount approved in FY 1990 and requested by the Administration.

Human Nutrition Information Service

NASDA concurs with the Administration's request for a $1.7 million increase for the Human Nutrition Information Service to $10.7 million. $1 million of this money will be used to help implement the Administration's Food Safety Initiative. As one of the four lead agencies, HNIS will develop a linkage of food intake data on individuals through an expanded Food Grouping System with a new National Residue Data Bank (NRDB). This will incorporate the pesticide use data collected by the National Agricultural Statistics Service and the levels of pesticide residues on fresh and processed products collected by other agencies, states and organizations. This component of the Administration's Residue Exposure Assessment System would provide estimates of potential pesticide exposure levels for individuals. HNIS would adapt the approach used in the National Nutrient Data Bank, respected worldwide, increasing the NRDB.

Economics and Statistics

As I mentioned earlier, NASDA is in complete agreement with the Administration in support of new food safety initiatives. We therefore urge the subcommittee to appropriate $140.3 million for Economics and Statistics in FY 1991, as proposed by the Administration. Of this amount, we concur with USDA's proposals of $56.5 million for the Economic Research Service--$5.6 million above the current estimate for 1990, $81.4 million for the National Agricultural Statistics Service--$14.3 million above the FY 1990 estimate, and $2.4 million for the World Agricultural Outlook Board--$500,000 above the FY 1990 estimate.

We believe it is very important that USDA be able to allocate the $11 million it is requesting to initiate new analysis and expand existing analysis and data collection in the safety of the nation's food and water supply. In addition, the increased funding for NASS would provide that agency with $7 million for a three-year cyclical survey of pesticide use data to complement state data, $2.4 million to improve statistical sampling frames in order to enhance efficiency and quality of data colelction, $1.8 million to enhance data collection on agricultural labor and wage rates, and $3 million for increased program support costs and increased pay costs.

Soil Conservation Service

NASDA urges the subcommittee to appropriate at least $728 million in FY 1991 for the Soil Conservation Service, the same as the current estimate for FY 1990. We believe this is an extremely important program, and should not be reduced to $725.4 million, as proposed by the Administration.

Food Safety and Inspection Service

NASDA is pleased that the Administration has proposed an increase in the FY 1991 budget for the Food Safety and Inspection Service to $442 million. We support this $24 million increase over the 1990 current estimate of $417 million. We also concur with the Administration's request for $38.5 million for grants to states under the FSIS State Meat and Poultry Inspection program, an increase of $1.9 million the from FY 1990 current estimate. We believe the food inspection system in the United States to be the safest and strongest in the world, and it is important that we continue to give strong financial support to this system.

Foreign Market Development Program

NASDA has been cooperating with the U.S. Department of Agriculture's Foreign Agricultural Service for many years in expanding our overseas markets. The biennial NASDA National Food and Agriculture Exposition, an excellent example, provides American food and agricultural producers with a unique opportunity to sell U.S. food, beverage, seed and nursery products to overseas buyers--thus helping to reduce deficits with our trading partners and making agriculture and the food industry in the U.S. more profitable. It is a prime example of what can be accomplished through a coooperative working agreement between an agency of the federal government and the states. FAS has been an invaluable partner in this effort. We urge you to appropriate $115 million for FY 1991--$11.5 million more than the Administration's request of $103.5 million for the Foreign Agricultural Service. We believe this increase is justifiable because of the many new responsibilities assigned to FAS in recent years through the passage of the Food Security Act of 1985 and the Omnibus Trade Bill of 1988.

Funds to support foreign market development must be maintained at an appropriate level to allow FAS to operate and staff its overseas offices and provide adequate resources to market cooperators. These offices must be capable of continuing and expanding their work in market research, efforts to break down non-tariff trade barriers, and provide U.S. companies with foreign sales leads. An FAS appropriation of $115 million would provide for an adequate foreign market development program.

Targeted Export Assistance

Overall market development activities have been enhanced by the Targeted Export Assistance (TEA) program. TEA funds hav enabled increased export promotion activity in areas where U.S. commodities have been adversely affected by unfair trade practices. We urge you to appropriate $325 million for the TEA program, as called for in the 1985 Farm Bill. We believe the success achieved by the TEA program justifies the monies originally authorized. Congress has authorized TEA funds through FY 1990. Because this program has been so successful and as we look to a 1990 Farm Bill, we should give every consideration to a continuation of the Targeted Export Assistance program.

Export Enhancement Program

The Export Enhancement Program has been an invaluable tool in allowing our farmers to compete on a level playing field with our heavily-subsidized foreign competitors. We urge the subcommittee to appropriate $1 billion for EEP, an increase of $100,000 over the Administration's request and $444,000 over the current FY 1990 estimate.

Food and Drug Administration

Since 1973, the Food and Drug Administration has contracted with state Departments of Agriculture and other state agencies for the performance of food, feed and medical equipment inspections by state personnel. FDA contracts with states are funded through the agency's field operations budget. In FY 1990, this important program was funded at $5.4 million. We request that funding for FY 1991 be no less than last year.

Conclusion

In conclusion, Mr. Chairman, we feel that, after years of hardship, agriculture is now on its way to recovery. Farm debt levels are being reduced, and land values have stabilized. However, we still have a long way to go. Now is not the time to reduce or eliminate programs that are necessary to a viable agriculture. It is imperative that continuity of programs basic to agriculture be maintained, and the vital cost-sharing programs not be disturbed.

As you go about your sincere deliberations on the agriculture budget, I would like to state a long-standing policy of NASDA. We believe the federal deficit should be reduced and that the federal government, as we do in the states, should operate from a balanced budget. However, the federal budget cannot be balanced on the back of agriculture. We have consistently said agriculture is willing to do its part in reducing the national deficit, but should not have to take more than its fair and equitable share of those reductions.

NATIONAL ASSOCIATION OF STATE N.E.T. PROGRAM COORDINATORS

STATEMENT OF JUDITH B. COGBURN, PAST-PRESIDENT

- **Although increased funds were authorized for the Nutrition Education and Training (NET) Program, they were not appropriated for fiscal year 1990, and NET continues to be funded at the reduced level of $5 million.**

- As the educational component of the Child Nutrition Programs, NET is dedicated to improving the nutrition knowledge of teachers, school food service personnel, and children of all ages. It is a health promotion and disease prevention program.

- The National Academy of Sciences Report, "Diet and Health: Implications for Reducing Chronic Disease Risk," released in 1989, states the need for massive education efforts and appropriate educational tools to motivate the public to change its dietary habits.

- "The Surgeon General's Report on Nutrition and Health," released in 1988, emphasized the link between diet and its relationship to the leading causes of death and disability among Americans. This report states that educating the public about dietary choice is essential, and educational efforts should begin in primary school and continue throughout the secondary grades.

- Public Law 101-147 reauthorized and extended the NET Program through fiscal year 1994. It authorized to be appropriated:

  - $10 million for fiscal year 1990
  - $15 million for fiscal year 1991
  - $20 million for fiscal year 1992
  - $25 million for each of the fiscal years 1993 and 1994.

  These increased funds were not appropriated.

- NET was originally funded at 50 cents per child or $26 million. States now receive less than 10 cents per child or $5 million. Public Law 101-147 **authorized** a gradual restoration of funds back to the original level of 50 cents per child. So that this restoration may actually occur, an **appropriation** of $15 million is needed for fiscal year 1991.

- Public Law 101-147 requres the U.S. Department of Agriculture to publish dietary guidance and it requires schools to implement the guidance. The increased NET funding is essential to provide the training needed to carry out the provisions of this law. Additionally, with the $15 million authorized for fiscal year 1991, NET services would be expanded to include nationwide nutrition education, food service, and health education workshops; onsite consultant and training services; and increased parent involvement.

- During its history NET funds have been used for:

  - training programs for teachers and food service personnel
  - training for child nutrition personnel from child care programs through twelfth grade
  - nutrition curriculum for preschool, primary and secondary students
  - training videos for a variety of audiences
  - public service announcements to promote good nutrition and school meals
  - computer software to teach nutrition and analyze menus

- Specialized NET materials and programs have been developed for populations such as adolescents at risk, pregnant teens, athletes, handicapped individuals, and parents.

The Society for Nutrition Education and the National Association of State Nutrition Education and Training (NET) Program Coordinators have made the continuation of an adequately funded Nutrition Education and Training (NET) program one of their highest priorities. We appreciate the leadership which this Committee has given to nutrition programs over the years. We know that nutrition education is a vital component of the Child Nutrition Programs.

Last year the National Education Association (NEA) released a report prepared by the Food Research and Action Center (FRAC) called The Relationship Between Nutrition and Learning. In the introduction the President of NEA said "Growing numbers of our students are coming to school burdened with disadvantages. More are poor and, because of poverty, more are ill-fed. To help these students succeed in school, we must not only have high academic standards, but we must deal with the students' needs. Children cannot learn if they are malnourished or if they are too poor to have enough to eat." This NEA report cites research findings which indicate that hunger leads to nervousness, irritability and disinterest; that skipping breakfast often causes nausea, dizziness, headache and fatigue in the morning; and that the hungry child is passive, apathetic and timid. Malnutrition is happening in our economically advantaged homes, not just in our poorer homes. In our "fast-moving" society today there are kids who are hungry or malnourished because their parents are so busy with their jobs that they do not have time to grocery shop or to prepare the kind of nutritious meals that they received as a child. There are elementary school aged "latchkey kids" responsible for meal preparation for their entire family. There are children whose breakfasts consist of what they can grab from the counter or refrigerator as they go out the door to school.

For the last 10 years, the NET Program has addressed these matters. Now the NET program needs your help. This vital, cost-effective health promotion and disease prevention program is in dire need for an increase in funds. Federal funding of the NET Program was reduced from $26,000,000 in 1978 to $5,000,000 in 1982, where it remains in FY'90. Thus NET currently receives one-fifth of its original funding.

This past fall, realizing that NET could no longer operate at its 1982 appropriations level, Congress increased NET's reauthorization funding level. PL 101-147 reauthorized the NET Program at an increased level for each of five years. For FY'91 NET has been authorized to receive $15,000,000, yet only $5,000,000 has been set aside for NET in President Bush's budget proposal.

The costs to operate and maintain NET programs throughout the country have increased steadily since 1982, diminishing NET's accomplishments as the appropriations remained unchanged. An increase of $10 million would allow NET to reinstate some of the college-level nutrition courses for teachers and school food service personnel that it was once able to offer. Nutrition curricula for preschool through grade 12 would be updated to reflect the current knowledge of the scientific and educational communities regarding nutrition, knowledge that has changed significantly in the past decade.

The NET program is equipped to educate our children, teachers and food service personnel as well as parents about nutrition. NET is a family nutrition education program. It fills the gap between WIC and Meals on Wheels. NET funds have been used to produce specialized nutrition materials and educational programs for handicapped individuals, pregnant teens, students athletes and coaches. In addition, it has provided training to teachers, children, parents and food service personnel in child care programs through the twelfth grade. NET programs throughout the country have achieved remarkably impressive accomplishments despite limited funding such as the development of:

- the highly-acclaimed California "Choose Well-Be Well" nutrition education curriculum guide now used world-wide.
- the Emmy Award winning television series "High Feather" developed in New York State; and
- the Pennsylvania School Breakfast Campaign especially targeting "high-risk" youth, destined to become a national model.

A 1985 investigation into the effectiveness of nutrition education, conducted by the University of Minnesota for the National Dairy Council and published by the Society for Nutrition Education, resulted in three major findings. The first is that nutrition education results in a marked increase in knowledge in nutrition. The second is that nutrition education results in some increase in positiveness of attitudes toward eating nutritiously. The third is that nutrition education results in constructive changes in participants' patterns of food consumption. Thus, this study confirmed what we in the NET program have demonstrated time and again, that nutrition education works!

These successes notwithstanding, there is still much to be done. Because of the decreased funding in recent years, we have been unable to reach large segments of the school population. The program now reaches only 85,000 teachers, 67,000 food service personnel, and 2.2 million students as compared to the 211,000 teachers, 103,000 food service personnel, and 5.6 million students reached with the original funding level.

The public's interest and concern regarding the nutritional quality of school lunch meals cannot be overlooked. Now more than ever, our schools need the NET program to provide leadership and guidance in the form of nutrition education and training to the school food service personnel. This training needs to be expanded so that all children can have access to high quality, nutritious meals.

Our two organizations, SNE and NASNET are jointly asking you to increase the appropriation levels for the NET Program to equal those established in PL 101-147. We ask you to consider increasing the funding for this essential program to $15,000,000 for FY'91. These additional funds will ultimately result in a cost savings to this country, for we believe that health care costs will decrease as healthy food habits are established.

NATIONAL ASSOCIATION OF STATE UNIVERSITIES AND LAND-GRANT COLLEGES, RESIDENT INSTRUCTION COMMITTEE ON ORGANIZATION AND POLICY

STATEMENT OF DR. JAMES L. OBLINGER, ASSOCIATE DEAN AND DIRECTOR OF ACADEMIC AFFAIRS, NORTH CAROLINA STATE UNIVERSITY

I want to urge your support of USDA's higher education programs as described in materials submitted in reference to NASULGC's 1991 Budget Committee Recommendations. These programs are uniquely designed to produce college and university graduates with the requisite competencies to advance global competitiveness of the U.S. food and agricultural sector. Without such nationally supported initiatives, this Nation's food and agricultural scientific and professional expertise base is further jeopardized.

Specifically, the USDA higher education programs are targeted toward attracting outstanding scholars into advanced degree programs and post-doctoral studies enhancing the quality of college and university programs (curricula, faculty, delivery modes, etc.) and strengthening the teaching and research competencies of our 1890 land-grant institutions. They are all competitive in nature and either require or encourage matching support, thereby using Federal dollars to stimulate collateral State and private support.

The President's FY 1991 budget includes three of the proposed programs. However, it does not allow a post-doctoral program nor adequately provide for the Graduate Training Grants Program or the Challenge Grants Program. For example, the Executive Budget provides for supporting about 60 doctoral and 30 master's fellows. This program has had profound affect on bringing superior scholars into doctoral studies in such important areas as water science, biotechnology, food science/nutrition, international marketing and bioprocessing or engineering. At a minimum, we need to be supporting 120 such students annually. The Challenge Grants Program, while only one year old, is unquestionably motivating schools to rethink curriculum and to plan more effectively for faculty development.

The Nation's colleges of agriculture and natural resources are the predominant producers of scientists, professionals and managers with food, agricultural and natural resource expertise. They offer the greatest potential for the future development of sophisticated agricultural mindpower. Efforts must be taken to strengthen these educational programs primarily responsible for the development of future generations of food and agricultural scientific and professional expertise.

The Resident Instruction Committee on Organization and Policy believes that now, more than ever, the U.S. higher education system in food, agriculture and natural resources must reach new levels of excellence. Outstanding students, including women and minorities, must be attracted to these disciplines and relevant programs must be sufficiently funded to support excellence. RICOP maintains that this enhancement process can best be supported by a national partnership between colleges and universities, agribusiness and industry, the states and the Federal Government.

Recognizing the need for excellence, Congress has provided funding since 1984 ($2,852 million in FY 89) for the Competitive Graduate Training Grants Program. Joining in that recognition, the Executive Branch included $4 million in its FY 1990 USDA budget for the Graduate Training Grants Program and also included two other programs, i.e., Institution Challenge Grants at $2 million and 1890 Institution Capacity Building Grants at $11 million.

Whether or not we face them or admit that they exist, there are very serious problems with the merging human capital base on which our Nation's food, agricultural and natural resource system will depend. Plenty of current evidence--mediocre aptitude scores, stagnant or declining enrollments--indicates that science, in general, is out of style and is a low priority among our Nation's young people. Fewer than 700 U.S. citizens--less than 14 per state--earned Ph.D.'s in the food, agricultural and natural resource sciences last year.

To develop the requisite human capital for the food, agricultural and natural resource system, we must focus upon four critical challenges--improving curricula, attracting and retaining scholars, increasing minority participation and enriching program quality. The food, agricultural and natural resource system faces significant human capital development challenges because it has not invested sufficiently and appropriately in the human resources marketplace.

The Office of Higher Education Programs under the Secretary of Agriculture today has evolved an effective array of programs that address the development of the most important component of our food, agricultural and natural resource system: human capital. Any coherent plan for maintaining the strength and competitiveness of American agriculture must include human capital development as a major parameter in the equation. Human capital development was stressed by President Bush in his State of the Union address last week. Our food, agricultural and natural resource system needs bright young minds, in sufficient numbers, educated to the highest level appropriate, taught in institutions equipped and staffed by faculty members dedicated to providing quality education.

A more specific discussion of each of RICOP's recommendations follows:

GRADUATE TRAINING GRANTS (FELLOWSHIPS)

During the past five years, both the National Agricultural Research and Extension Users Advisory Board and the U.S. Joint Council for the Food and Agricultural Sciences have identified scientific expertise development as a top national agricultural science and education priority. Each group has repeatedly endorsed Executive Budget recommendations for the Graduate Training Grants (Fellowships) Program.

Established in 1984, with successive calls for proposals in 1987 and each year since, this competitive program is open to all colleges and universities, whether land grant or not. It has provided fellowships with sufficient stipend support to attract outstanding young men and women in Ph.D. degree programs in areas of national need spanning our food, agricultural and natural resource system.

Over this period, 433 doctoral fellowships have been awarded in five national needs areas: bioprocessing or agricultural engineering; plant or animal biotechnology; food, forest products and agribusiness marketing or management; food science and human nutrition and water science.

- The program is competitive. In the most recent three years, only 22 percent of the proposals submitted and only 13 percent of the fellowships requested have been funded.

- Each year, the program has attracted successful applicants from both inside and outside of the land-grant college of agriculture system. For example, fellowships have been awarded to Stanford University, Massachusetts Institute of Technology, the University of Iowa, the University of Chicago and the University of California at Los Angeles. Likewise, fellowships have been awarded to the College of Biological Science at the University of Minnesota-St. Paul and to the College of Commerce and Business Administration at the University of Illinois. It addresses quality and asks simply: Where are the best locations and programs to nurture the graduate education of the young people who will be the discoverers of tomorrow?

o The program succeeds in bringing talented young scientists into the food, agricultural and natural resource system. The mean Graduate Record Exam score for the first 300 fellows selected into the program was almost 1,300, more than 300 points higher than the average graduate student in agriculture. To introduce these fellows to each other, a national symposium was held at the National Academy of Sciences. Anyone present would have been delighted to hear the exchanges and discussions which took place between these young men and women--food scientists and nutritionists from Tufts University and the University of Missouri, biotechnology fellows from Purdue University and Cornell University, agricultural engineers from Texas A&M and North Carolina State University. They were articulate, critical and thoughtful.

INSTITUTION CHALLENGE GRANTS

The competitive Institution Challenge Grants Program will catalyze significant improvements in the quality of food, agricultural and natural resource higher education programs. It will stimulate curricular change, enhance student experiential learning, recruit highly qualified students, upgrade scientific teaching instrumentation and augment faculty development activities.

Some 35 grants ranging from $50,000 to $100,000 will be awarded in the targeted areas. The program will generate an additional $2 million dollars for instructional improvements in food, agricultural and natural resource higher education programs through a non-federal matching requirement for grant recipients.

Any educational institution having demonstrated excellence in food, agricultural and natural resource teaching may compete for a challenge grant. Cooperative activities among educational institutions and between universities and other cooperators will be encouraged.

1890 INSTITUTION CAPACITY BUILDING GRANTS

The proposed 1890 Institution Capacity Building Grants Program will help the 1890 land-grant colleges and Tuskegee University enhance their ability to educate effectively. Historically, the 1890 colleges and universities have been the principal contributors of minority graduates to the food, agricultural and natural resource system. Additional resources must be made available for these universities to develop faculty, improve curricula, upgrade instructional equipment, foster educational partnerships and enhance their research capability.

A decade from now, it is expected that 85 percent of new workers in the U.S. will be members of minority groups and women. Therefore, significantly more minority graduates must become available to assume professional roles in the food, agricultural and natural resource system.

Grants from this program encourage universities to provide matching contributions from non-federal sources and several of the institutions are actively seeking matching funds. Participating universities are required to cooperate with one or more USDA agencies in developing a proposal, in identifying potential non-federal matching funds and in conducting capacity building programs and activities.

POST-DOCTORAL FELLOWSHIPS

Sustaining our historic level of scientific knowledge and competence requires a continuing infusion on intellectual expertise. A 1988 report by the National Academy of Sciences' National Research Council's Board of Agriculture entitled "Educating the Next Generation of Agricultural Scientists" addresses the need for providing expanded opportunities for post-doctoral studies specifically targeted for the food and agricultural sciences.

The Post-Doctoral Fellowship Program will serve to develop needed food and agricultural scientific expertise while also stimulating cutting edge research across the agricultural system. The program will be managed so that public and private universities will compete for grants to recruit and advance the training of outstanding young U.S. citizen doctoral scientists in food and agricultural areas. Scientists emerging from the program will be valuable replacements for increasing losses due to retirements in our federal laboratories and our university system.

RICOP urges Congress to increase the FY 1991 Budget for the Competitive Graduate Training Grants to $5 million and increase the Institution Challenge Grants to $3 million. In addition, RICOP urges Congress to initiate a post-doctoral fellowship program for $2 million. These commitments, coupled with $11 million for the 1890 Institution Capacity Building Grants and the $2.85 million in Morrill-Nelson funding, would provide $23.85 million for Federal Government support for a coordinated package to: 1) enhance higher education in the food and agricultural sciences and 2) mainstream minority expertise development. Matching funds from the agricultural industry and other sources will mean even more far-reaching effects of these federal funds.

Please lend your support to these national initiatives. They are a part of the solution to the problems currently compromising our competitiveness in global markets and our quality of life in the United States. Please support food and agricultural sciences higher education programs at a level totaling $23.85 million in FY 1991, i.e., $5 million for Graduate Training Grants, $3 million for Challenge Grants, $11 million for 1890 Capacity Building Grants, $2 million for Post-Doctoral Fellowships and $2.85 million for the Morrill-Nelson Program.

NATIONAL ASSOCIATION OF STATE UNIVERSITIES AND LAND-GRANT COLLEGES

STATEMENT OF DR. HOOVER CARDEN, ADMINISTRATOR, 1890 EXTENSION PROGRAM, PRAIRIE VIEW A&M UNIVERSITY

MR. CHAIRMAN AND MEMBERS OF THE APPROPRIATIONS COMMITTEE:--

I am Hoover Carden, Administrator of the 1890 Cooperative Extension Program, Prairie View A&M University - Texas, the 1890 Representative for the FY 1991 Budget Committee, Division of Agriculture; and member of the Budget Committee, Extension Committee on Policy.

I appreciate the opportunity to make a statement in support of the 1890 and 1862 Land-Grant Colleges and Universities' FY 1991 budget request. The budget has been reviewed and sanctioned by the Division of Agriculture Budget Committee and the National Association of State Universities and Land-Grant Colleges and Universities. However, my specific purpose is to precisely outline for you the need and value for Extension programs emanating from the sixteen, 1890 Land-Grant Colleges and Universities and Tuskegee University.

NEED AND JUSTIFICATION

The 1890 colleges and universities have done a superb job in reaching the hard-to-reach and providing access to those individuals whom we have classified as being left behind. Through Extension program activities thousands of families and individuals have improved their level of living and are in sight of achieving part of the American dream. Therefore, we need to increase our efforts and expand our basic programming efforts to include food safety; youth at risk; water quality; diet, nutrition and health; low-input sustainable agriculture; and rural economic development.

The USDA Task Force, consisting of five 1890 land-grant colleges presidents and five USDA agency heads appointed by the Secretary of Agriculture, identified that USDA and the land-grant universities can make a significant contribution toward addressing the needs and problems of low-income and minority families and farmers maintain farm ownership. Over the years the Land-Grant Colleges and Universities have made concerted efforts to reach and assist with the needs of low-income farmers and families. But due to the cultural differences of these farmers and families more time and resources are needed in order to give adequate educational assistance needed by these individuals. Therefore, the request in the Division of Agriculture's FY 1991 budget request is badly needed in order to maintain and increase our efforts to these needy clientele groups.

Under the FY 1990 authorization for 1890 institutions and Tuskegee University, additional funds were requested as follows:

$26 million - Executive Request
(Congress reduced the request to $22 million)

However, because of the Gramm-Rudman sequestration, the final figure ended up being $21,836,000. There has been an increase in collaborative efforts among 1890 and 1862 Institutions and among 1890 Institutions and federal, state and county agencies, and groups to do joint multi-state, multi-region interdisciplinary programs. This mode of operations has added significantly to the quality and diversity of education and information outreach efforts of these institutions. This trend is expected to continue into FY 91 and beyond.

These efforts have helped in shaping FY 1991 budget recommendations for 1890 Institutions and Tuskegee University. The recommended funding for FY 91 by the Division of Agriculture and National Association of State Universities and Land-Grant Colleges is $24,900,000. If this funding level requested is not maintained it will be impossible for the 1890 Institutions to continue to be effective in their educational programming efforts.

Unprecedented changes now characterizing the U.S. are the Food and Agricultural system, the social system, the educational system, environmental technologies, and the globalization of markets and expanding technology which will significantly affect how and with whom 1890 Institutions do business in the future.

Historically, under-represented groups tend to cluster in fields they perceive as friendly and where they can exercise their talents fully, without discrimination and with a good chance of recognition and reward. When this fact is ignored by providers, these groups do not develop to their fullest potential. The groups referred to in this statement are not restricted to race, sex or national origin but include farm families, infants, youth, adults and the elderly, skilled labor, unskilled labor, single-parent families, teenage mothers and fathers, etc. The pattern of low expectations is evident throughout these groups and planned sustainable improvements require systematic changes.

Poverty continues to penetrate and grip a large number of children and adults, including a disproportionate share of minority children. It takes away people's capacity to dream and desire to move themselves from the stronghold of poverty. It affects the total person, the family, community, local, state and federal governments, which translates into no skills, no education, no money and no hope.

1890 Extension has addressed issues of under-represented groups for years, using modest or very limited resources. Relationships of a decade ago are no longer valid, and sweeping adjustments to current trends are necessary. Now, it needs help in building institutional capacity and procedure that will strengthen programs in support of a long term strategic approach to meet the needs of the under-represented group.

The budget request for 1890 and 1862 Institutions for FY 91 is $24,900,000 base; $10,000,000 for 1890 facilities and $381,648 for 1862. This funding will give these institutions greater capability to respond to the changing needs of priorities listed below.

A. Provide an educational pathway to learn, develop, make decisions, set goals and develop self-esteem for youth and families who are at risk.

B. Seek ways to work cooperatively with a wide range of universities, governments, businesses, and private sectors organizing to describe dynamic experiences for key leaders and clientele.

C. Build a staff to a level of expertise who can meet the challenges of societal issues more effectively through training, publications and education while demonstrating alternative methods and options toward the resolution or abatement of societal problems.

STATEMENT OF KENNETH R. FARRELL, CHAIRMAN, 1991 BUDGET COMMITTEE, DIVISION OF AGRICULTURE

Mr. Chairman, I am Kenneth R. Farrell, Vice President, Agriculture and Natural Resources, University of California. I appreciate this opportunity to appear before your Committee as Chairman of the 1991 Budget Committee, Division of Agriculture of the National Association of State Universities and Land-Grant Colleges, and to present our recommendations for fiscal year 1991 federal funding for agricultural research, extension, and higher education at land-grant universities.

Our funding recommendations have been established through an extensive, continuing process of consultation within the land-grant community, with governmental agencies and advisory groups, and with consumer and user organizations at state and local levels throughout the country. Thus, our recommendations represent a broad, national consensus on priorities and funding needed in fiscal year 1991.

THE SETTING OF AGRICULTURAL SCIENCE AND EDUCATION

American agriculture remains one of the most technologically advanced, efficient production systems in the world. Productivity, as conventionally measured, has advanced steadily throughout the post-World War II era. Agriculture has achieved this enviable position in major part as a result of three factors: 1) public and private investment in scientific research and development; 2) effective mechanisms for transfer of technology to managers operating in a competitive market environment; and 3) steady advances in the managerial skills of agricultural operators as a result of public investments in education.

In part because of the very successes of agriculture and the consequent abundance of relatively low cost of food and fiber in this country, continued productivity advances and agriculture's competitiveness in global markets are too frequently taken for granted. This attitude of complacency, if continued, could have serious long-term consequences for American agriculture and rural America.

It is well known that agricultural productivity gains in many other countries, particularly in the market-oriented industrialized and newly industrialized countries, have equaled or exceeded those in the United States in recent years. It is also well known that in many of these countries investments in agricultural R&D approach or exceed those of the United States relative to the size or value of agricultural production. The once-dominant position of the U.S. agricultural science establishment has eroded whether measured by R&D investment, by scientist years employed, or by scientific value of research output.

Coupled with these changes in the global setting of agriculture and agricultural science, the domestic setting of U.S. agriculture has been undergoing fundamental change in recent years. I refer here to the competitive pressure on natural resources used by agriculture. I refer particularly to public goals to maintain or enhance quality of the natural environment and to reduce risks to humans and other species from the presence of toxic material in the food supply and elsewhere in the environment.

Briefly stated, we have entered an era in which agriculture and agricultural productivity are to be assessed not just by physical input-output or traditional market values, but also by the environmental and natural resource consequences and costs of agricultural production.

Mr. Chairman, it is my judgment that if we are to deal successfully with this twin set of forces--more intensive competition in world markets and development of economically feasible, more environmentally and natural resource-sensitive production systems--we must reverse soon the long-term erosion of agricultural science in the United States. To do so will require major new investments in science and education in the years immediately ahead.

RECOMMENDATIONS FOR FISCAL YEAR 1991

The committee recommendations for 1991 total $879.6 million for research, extension, and higher education, a 24 percent increase over the Gramm-Rudman-Hollings Appropriations of FY 1990. Our recommendations include $107.5 million of additional funding for a National Research Initiative for Agriculture, Food and Environment--about two-thirds of the total increase. Excluding the National Research Initiative, the recommendations amount to an increase of 8.9 percent over 1990.

The proposed increases in funding involve three equally important, interdependent priority purposes:

1. Strengthen Base Programs for Research, Extension, and Higher Education

An increase of 6.0 percent in base funds for research and 6.7 percent in base funds for extension are needed to offset anticipated inflation in Fiscal Year 1991 and to begin reparation of the near 20 percent decline in real funding levels of the past 10 years. In addition, the 1991 Budget Committee recommends continued funding of the Morrill-Nelson Act to support higher education.

The erosion of base funds in the past decade has impaired the ability of the system to meet future critical state and national research and extension needs. Major redirection of these funds to address critical issues already has occurred at most land-grant universities. Costs of conducting science-based research and extension have escalated dramatically and will continue to do so in the immediate future.

Reversal of the erosion in base funding is essential if we are to maintain the basic infrastructure for research and extension. Without improvements in that infrastructure, the system will be unable to sustain core research and extension capabilities built over the past several decades. Without the flexibility provided by inflation-adjusted federal base funds and the substantial leveraging (three- to five-fold) of state funds which accompanies base funds, the quantity, quality, and responsiveness of research and extension programs will deteriorate steadily in the years ahead. The system is stretched far too thinly at prevailing levels of base funding to meet the expectations of those depending upon its programs.

2. Expand Competitive Research Grants

In its recent report "Investing in Research--A Proposal to Strengthen the Agricultural, Food, and Environmental System", the Board on Agriculture of the National Research Council proposed the creation of a competitive grants program funded at $500 million annually. In support of such a program, the President's Fiscal Year 1991 budget proposes a National Research Initiative (NRI) of $100 million in 1991. Included in the $100 million are $42.5 million of current competitive grant funds.

The NASULGC 1991 Budget Committee fully supports and endorses the need for and principles of an expanded competitive grants program of the type proposed in the NRI. However, the Committee supports an expansion of competitive grants only on the basis that such an expansion not come at the expense of currently funded programs, particularly base funds. An enhanced competitive grants program is a complement to, not a substitute for, enhanced funding of base and other programs.

The President's budget requests funding in 1991 for four of the six component areas of the NRI: Natural Resources and Environment; Nutrition, Food Quality and Health; Plant Systems; and Animal Systems. The 1991 Budget Committee strongly recommends funding of all six components of the National Research Initiative in Fiscal Year 1991, adding the areas of Markets, Trade, and Rural Revitalization, and Engineering Processes and Value-Added Products. In addition, increased initial funding is recommended for Natural Resources and Environment and for Nutrition, Food Quality and Health relative to the Administration's proposal.

The Committee recommends funding of the National Research Initiative at $150 million in Fiscal Year 1991 with the caveats noted above. In addition, we are requesting additional funding for special research grants related to water quality and management, pesticides and integrated pest management, and global change.

3. Undertake Vital New Initiatives in Extension and Higher Education

A unique and highly valuable characteristic of land-grant universities is the tradition of close linkage and interdependencies among research, extension, and resident instruction. Research enriches resident instruction; the linkage between research and extension promotes the adaptation, application, and transfer of research-based information to meet the needs of private and public sector managers in local communities throughout the country.

The NASULGC 1991 Budget Committee recommends funding of several nationwide and special extension programs, particularly in water quality and management, rural development, sustainable agriculture, integrated pest management, youth-at-risk, and management of natural resources. The Committee also recommends a further increase in funding for higher education including capacity building and strengthening grants for the 1890 institutions and Tuskegee University, graduate training and postdoctoral fellowships in the agricultural sciences, and institution challenge grants.

The Committee emphasizes that these three components recommended for increased funding in Fiscal Year 1991 are integral, interdependent parts of the needs of the land-grant system. Each component is of major significance and importance in its own right; each component complements and is interdependent with the other two. Base funds support all three areas; the recommendations are presented as an interdependent whole.

FUNDING OF PROGRAM PRIORITIES

Mr. Chairman, the tables which follow provide you with an overview of the 1991 Budget Committee recommendations in program terms, including research, extension, and higher education. Data are in millions of dollars with numbers in parentheses being FY '90 Gramm-Rudman-Hollings appropriations.

PRESERVING NATURAL RESOURCES AND PROTECTING THE ENVIRONMENT

Competitive Research Grants (NRI)	30.0 M	(7.7 M)
Special Research Grants (Sec. 2c): Water Quality and Management	10.0 M	(6.6 M)
National Extension Initiative: Water Quality and Management	15.5 M	(5.2 M)
Special Research Grants (Sec. 2c): Pesticides/Biocontrol/Integrated Pest Management (IPM)	10.3 M	(7.4 M)
Specified Extension Programs: IPM/Pesticides	11.8 M	(9.6 M)
Special Research Grants (Sec. 2c): Global Change	5.0 M	(0)
Renewable Resources Extension Act	4.0 M	(2.7 M)
Other Research Programs: Low Input Sustainable Agriculture (LISA)	4.4 M	(4.4 M)
Extension Program: Sustainable Agriculture	2.5 M	(0)
Special Research Grants (Sec. 2c): Acid Precipitation	0.7 M	(0.7 M)

ENHANCING NUTRITION, FOOD QUALITY AND HEALTH

Competitive Grants (NRI)	19.0 M	(1.5 M)
Expanded Food and Nutrition Education Program (EFNEP)	58.6 M	(58.2 M)
Extension Program: Food Safety/Quality	5.0 M	(0)
Specified Extension Program: Urban Gardening	3.5 M	(3.5 M)
Specified Extension Program: Farm Safety	1.0 M	(1.0 M)

DEVELOPING NEW PROCESSES AND VALUE-ADDED PRODUCTS

Competitive Grants (NRI)	11.0 M	(0)
Other Research Programs: Supplemental and Alternative Crops	0.9 M	(0.3 M)

ENHANCING COMPETITIVENESS OF AGRICULTURE AND REVITALIZING RURAL AMERICA

Competitive Grants (NRI)	10.0 M	(0)
Special Research Grants (Sec. 2c): Rural Development Centers	0.5 M	(0.5 M)
Extension Program: Rural Development Centers	1.0 M	(0.9 M)
National Extension Initiative: Revitalizing Rural America	5.0 M	(0)
Other Research Programs: International Trade Development Centers	3.1 M	(3.1 M)

ENHANCING THE PRODUCTIVITY AND SUSTAINABILITY OF PLANT SYSTEMS

Competitive Grants (NRI)	50.0 M	(22.2 M)
Special Research Grants (Sec. 2c): Tropical and Subtropical Agriculture	3.3 M	(3.3 M)

ENHANCING THE PRODUCTIVITY AND SUSTAINABILITY OF ANIMAL SYSTEMS

Competitive Grants (NRI)	30.0 M	(22.2 M)
Other Research Programs: Aquaculture Centers	3.7 M	(3.7 M)
Special Research Grants (Sec. 2c): Minor Use Animal Drugs	0.3 M	(0.2 M)

ENHANCING EXCELLENCE OF HUMAN RESOURCES		
National Extension Initiative: Youth-at-Risk	10.0 M	(0)
Higher Education		
~~1890 Capacity Building Grants	11.0 M	(7.3 M)
~~Graduate Training Fellowships	5.0 M	(2.8 M)
~~Institution Challenge Grants	3.0 M	(1.0 M)
~~Post Doctoral Fellowships	2.0 M	(0)

It should be noted that base funds are allocated state-by-state to varying degrees to support all the above programs.

Finally, Mr. Chairman, I have attached a series of tables depicting our recommendations in terms of budget authority with comparisons to the Gramm-Rudman-Hollings Fiscal Year 1990 appropriations and Fiscal Year 1991 recommendations in the President's budget.

Mr. Chairman, we respectfully submit this statement for the record. We thank you again for this opportunity to discuss our needs with you. We welcome your comments and questions.

TABLE I: SUMMARY OF FUNDING RECOMMENDATIONS FOR RESEARCH, EXTENSION AND HIGHER EDUCATION
(Thousands of dollars)

	FY 90 Appropriations GRH	FY 91 Executive Request	FY 91 NASULGC Recommendations
Base Programs			
Research	202,756	197,689	214,921
Extension	265,054	270,627	282,708
Higher Education	2,810	0	2,810
Special Programs			
Research	123,554	132,204	224,441**
Extension	104,126	75,049	133,740
Higher Education	11,111	17,000	21,000
TOTAL	709,411	692,569	879,620

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* GRH refers to the Gramm-Rudman-Hollings balanced-budget law.

** Includes $107.5 million of new funding for the National Research Initiative (NRI) for Agriculture, Food and Environment.

TABLE II: RESEARCH FUNDS
(Thousands of dollars)

	FY 90 Appropriations GRH	FY 91 Executive Request	FY 91 NASULGC Recommendations
BASE PROGRAMS			
Hatch Act Base Funds	155,058	158,545	164,361
McIntire-Stennis Act	17,279	12,975	18,316
Evans-Allen Program (1890)	25,012	26,169	26,513
Animal Health (Section 1433)	5,407	0	5,731
TOTAL BASE PROGRAMS, RESEARCH	202,756	197,689	214,921
RESEARCH GRANTS P.L. 89-106			
Competitive Grants (Sec.2b)			
Plant Science	7,751	a	a
Human Nutrition	1,481	a	a
Animal Science	4,937	a	a
Biotechnology	18,775	a	a
Basic Pest Sciences	1,975	a	a
Stratospheric Ozone/Global Change	3,653	a	a
Forestry	3,949	a	a
NRI-Nat'l Resources &Environment	0	15,000	30,000
NRI-Nutrition, Food Quality, and Health	0	5,000	19,000
NRI- Plant Systems	0	50,000	50,000
NRI- Animal Systems	0	30,000[b]	30,000
NRI-Engineering Processes and Value-Added Products	0	0	11,000
NRI-Markets, Trade, and Rural Revitalization	0	0	10,000
Total Competitive Grants	42,521	100,000	150,000
SPECIAL GRANTS (SEC. 2C)			
National Programs			
Acid Precipitation	653	0	692
Animal Health	5,633	0	a
Aquaculture Research General	563	0	a
Integrated Pest Management	2,903	4,000	4,000
Minor Use Animal Drugs	226	329	329
Biological Impact Assessment	123	300	300

TABLE II: RESEARCH FUNDS (continued)
(Thousands of dollars)

	FY 90 Appropriations GRH	FY 91 Executive Request	FY 91 NASULGC Recommendations
Pesticide Clearance	1,975	3,000	3,000
Pesticide Impact Assessment	2,437	2,968	2,968
Rural Development Centers	494	0	524
Tropical and Subtropical Agriculture	3,299	0	3,299
Water Quality and Management	6,615	10,000	10,000
Global Change	0	5,000	5,000
Total Special Grants (2c)	24,921	25,597	30,112
Special Problem Grants[c]	30,907	0	30,907
TOTAL RESEARCH GRANTS	98,349	125,597	211,019
OTHER RESEARCH PROGRAMS			
Rangeland (P.L. 95-113)[a]	469	0	a
Aquaculture Centers (P.L. 95-113)[d]	3,703	0	3,703
Supplemental & Alternative Crops (P.L. 95-113)	321	918	918
International Trade Development Centers[d]	3,112	0	3,112
Critical Materials (P.L. 98-284)[e]	5,300	0	0
Low Input Sustainable Agriculture (P.L. 99-198)	4,394	4,450	4,450
TOTAL OTHER RESEARCH PROGRAMS	17,299	5,368	12,183
Federal Administration			
Direct	13,336	12,239	12,239
1890 Capacity Building Grants[f]	(5,430)	(11,000)	(11,000)
NET FEDERAL ADMINISTRATION	7,906	1,239	1,239
TOTAL RESEARCH	326,310	329,893	439,362

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[a] Incorporated within the National Initiative for Research on Agriculture, Food and the Environment.

[b] Includes funds transfered from Special Grants for Animal Health. Animal Health formula funds are continued as a separate item.

[c] Some site specific 2c grants are included in the total for Special Problem Grants which are established to address acute problems in specific states.

dAny funding increases should be awarded competitively.

[e] Some items were moved to Supplemental and Alternative crops for FY1991.

[f] See Higher Education, Table IV.

TABLE III: EXTENSION FUNDS
(Thousands of dollars)

	FY 90 Appropriations GRH	FY 91 Executive Request	FY 91 NASULGC Recommendations
BASE PROGRAMS			
Smith-Lever 3b and 3c Base Programs	242,272	246,535	256,808
D.C. Extension	946	1,000	1,000
1890 Colleges & Tuskegee U.	21,836	23,092	24,900
TOTAL BASE PROGRAMS, EXTENSION	265,054	270,627	282,708
NATIONAL EXTENSION INITIATIVES			
Water Quality & Management	5,211	15,500	15,500
Improving Nutrition, Diet & Health			
Food Safety and Quality	0	2,000	5,000
Revitalizing Rural America	0	0	5,000
Competitiveness of American Agriculture			
Sustainable Agriculture	(4,450)[a]	0	2,500[b]
Youth-at-Risk	0	10,000	10,000
TOTAL NATIONAL EXTENSION INITIATIVES	5,211	27,500	38,000
SPECIFIED PROGRAMS[c]			
Expanded Food and Nutr. Ed. Program (EFNEP)	58,197	21,600	58,635
Rural Development Centers	943	0	950
Integrated Pest Management	7,110	7,164	8,250
Pesticide Impact Assessment	2,561	3,580	3,580
Financial Management	1,416	0	0
Urban Gardening	3,474	0	3,500
Farm Safety	963	0	970
Pacific Rim Program	645	0	650
1890 Extension Facilities	9,437	9,508	9,508
Renewable Resources Extension Act	2,744	0	4,000
Farmer Assistance Grants	3,325	0	0
TOTAL SPECIFIED PROGRAMS	90,815	41,852	90,043
Federal Administration, Direct	8,745	5,697	6,347
Pacific Rim Program	(645)[d]	0	(650)[d]

TABLE III: EXTENSION FUNDS (continued)
(Thousands of dollars)

	FY 90	FY 91	FY 91
	Appropriations GRH	Executive Request	NASULGC Recommendations
NET FEDERAL ADMINISTRATION	8,100	5,697	5,697
TOTAL EXTENSION	369,180	345,676	416,448

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[a] See Low Input Sustainable Agriculture under Research in Table II.

[b] New program for Extension only.

[c] Established from time to time to address specific acute problems.

[d] See explanation under Specified Programs

TABLE IV: HIGHER EDUCATION FUNDS
(Thousands of dollars)

	FY 90	FY 91	FY 91
	Appropriations GRH	Executive Request	NASULGC Recommendations
BASE PROGRAM			
Morrill-Nelson Act	2,810	0	2,810
OTHER PROGRAMS			
Graduate Training Fellowships	2,816	4,000	5,000
Institution Challenge Grants	987	2,000	3,000
1890 Strengthening Grants[a]	1,878	0	0
1890 Capacity Building Grants[b]	5,430	11,000	11,000
Post Doctoral Fellowships	0	0	2,000
Total Other Programs	11,111	17,000	21,000
TOTAL HIGHER EDUCATION	13,921	17,000	23,810

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[a] Included in 1890 Capacity Building Grants in 1991 request.

[b] Funded under Federal Administration, Research.

TABLE V: INTERNATIONAL AGRICULTURE PROGRAMS
(Thousands of dollars)

	FY 90	FY 91	FY 91
	Appropriations GRH	Executive Request	NASULGC Recommendations
INTERNATIONAL SCIENTIFIC AND TECHNICAL COOPERATION			
Scientific and Technical Exchanges	1,591	1,816	1,900
Administration of International Research	1,415	1,433	1,700
International Organization Affairs	604	612	612
Total	3,610	3,861	4,212
INTERNATIONAL AGRICULTURAL DEVELOPMENT			
Agribusiness Promotion	301	305	305
Institutional Cooperation (ISEC)	99	100	200
PL 480 Support	64	65	65
Cochran Middle Income Fellowship Program	1,473	0	2,000
Total	1,937	470	2,570
OPERATION FAST	494	500	500
FOREIGN CURRENCY RESEARCH PROGRAM	875	0	8,000
Total OICD	6,916	4,831	15,282

NATIONAL ASSOCIATION OF STATE UNIVERSITIES AND LAND-GRANT COLLEGES, NATIONAL ASSOCIATION OF PROFESSIONAL FORESTRY SCHOOLS AND COLLEGES AND THE COMMISSION ON FORESTRY

STATEMENT OF DR. WARREN S. THOMPSON, DEAN, SCHOOL OF FOREST RESOURCES, MISSISSIPPI STATE UNIVERSITY

My name is Warren S. Thompson, and I am Dean of the School of Forest Resources at Mississippi State University. It is a privilege to provide this testimony on behalf of the National Association of Professional Forestry Schools and Colleges (NAPFSC). This organization represents the 60 schools and colleges of forestry and related natural resources in the United States.

Federal appropriations are an essential part of university-based forestry research programs. Funding appropriated by Congress for the McIntire-Stennis Cooperative Forestry Research Program provides a stable base of support that is critical to the long-term productivity of these programs and vital to the training of future scientists and educators. The McIntire-Stennis program emphasizes high-priority research needed to expand our knowledge base and to provide the foundation for future practical developments and economic gains. For 1991, we urge support of this program at $18.316 million.

Funds appropriated for university-based forestry research have been wisely used. Each dollar in federal funds has been leveraged on average by a factor of four to five to fund research programs which focus on problems and opportunities that have both regional and national significance. Collectively, these programs have been an unqualified success. They have helped to expand the market horizons for wood-based commodities, increased the available timber supply, and provided a better understanding of management systems appropriate for multiple-use of forest lands for timber, wildlife, and recreation. These programs have also made solid advances in knowledge of the forest ecosystem and of the basic chemical, physical, and biological forces which influence forest productivity.

The significance of this research program is closely tied to the importance of the forest resource to the economic and social well being of this country and its citizens. These benefits are primarily related to the production and processing of timber. The United States ranks first among nations of the world in industrial timber production. Forest-based industries employ 8.5% of the

U. S. manufacturing labor force and account for 7.3% of the total value added by manufacturing. Forestry and forest products lead all segments of the economy in employment, size of payroll, capital investment, and number of industrial firms in many southern and western states. The growing and processing of timber provide the economic underpinning for literally hundreds of communities in all regions of this country.

There are good reasons to believe that forest products will become even more important in the future. Global demand for forest products is increasing. This increase in demand coincides with diminished wood supplies in many established wood-producing countries of the world. The United States is well positioned in terms of timber supply and manufacturing and transportation infrastructure to satisfy a major share of this increase in global demand. However, continued profitability of forest-based industries will require that the United States develop more efficient production and processing systems if it is to compete effectively in a growing international market where foreign competition is also increasing.

In addition to the economic benefits which result from forestry research, there is an increasing need for research which focuses on the many environmental issues related to the management and utilization of the forest resource. Forested lands are the source of most of the surface water in the United States; provide habitat for many species of wildlife, including some which are endangered or threatened; and provide a great wealth of biodiversity. There is also evidence of a relationship between forests and climate.

Public concern about these and other non-timber values have focused unprecedented attention on forest-management systems. Emotions have at times taken precedence over reason. In the absence of a sound data base, there is a possibility that decisions which place unnecessary and unneeded restrictions on forest management practices will be made. The economic consequences of such actions could be substantial. The nation's forestry schools are in the forefront of research efforts which address these environmental issues and are well positioned in terms of the qualifications of their scientists to expand this effort.

We are fully aware of the critical need to exercise fiscal restraint in light of the size of the federal deficit. It will take a high degree of leadership to deal responsibly with this issue while, at the same time, maintaining momentum in particularly important programs. We believe that our budget request represents one such program because of the returns provided by past research and the opportunity for additional returns from on-going and proposed research.

While our request for FY 1991 represents an increase over the current funding level, it is not really consistent with either research needs or opportunities. The McIntire-Stennis program provides a significant part of the base funding for research and graduate programs in the nation's forestry schools and colleges. An appropriation of $18.316 million will provide support, in constant dollars, approximately equivalent to that provided by the 1978 appropriation. It is noteworthy that, in recognition of this erosion of support for forestry research, the members of the Executive Committee of the American Forest Council unanimously recommended that the McIntire-Stennis program be funded in 1991 at $25 million. This Committee represents the major forest products companies in the United States.

The major focus of the McIntire-Stennis program from its inception in 1962 has been the development of research in graduate education programs which have meaning in terms of the scientific and technical needs of the nation's forest resource. The success of the program in terms of achievements in overall effectiveness is a matter of record. This record and the importance of the forest resource to the social and economic well being of the country provide the rationale for the level of funding requested.

Thank you for the opportunity to present this testimony. I would be happy to respond to any questions or provide additional information.

NATIONAL ASSOCIATION OF STATE FORESTERS

STATEMENT OF TERRI BATES

The National Association of State Foresters (NASF) welcomes this opportunity to discuss the importance of forestry programs that foster good management of a valuable national resource. A primary goal of NASF is ensuring that stewardship practices are carried out on nonindustrial private forest lands (NIPF), while at the same time increasing forest productivity. Our forestlands are a renewable natural resource if managed wisely and with the future in mind.

There are several federal programs in place working towards this goal that Congress has continued to support.

For the first time in many years, forestry issues are receiving significant attention from the Administration. President Bush has proposed an ambitious, new multi-year program called *America the Beautiful*. The goal of this program is to plant an additional one billion trees a year. NASF supports this initiative effort strongly.

Consistent with this new initiative, funding has been proposed for several programs that previous Administrations have not recognized. These include the following: Agricultural Conservation Program (ACP), Conservation Reserve Program (CRP) and Forestry Incentives Program (FIP). NASF supports the levels the Administration has proposed for fiscal year 1991.

However, the Administration has proposed eliminating all funding for the Rural Community Fire Protection Program (RCFP), the Renewable Resources Extension Act (RREA) and McIntire/Stennis Research funding. These are important programs, deserving recognition for the role they play in assisting in the management of our forest resources.

($ in millions)

	Enacted FY90	Admin FY91 Proposal	NASF FY91 Proposal
ACP	176.9	176	176.9
FIP	12.4	12.4	12.46
RCFP	3.1	0	7.0
Mc-Stennis	17.5	0	25.0
CRP	1.765 bil	2.254 bil	2.254 bil
RREA	2.7	0	2.7

Rural Community Fire Protection Program (RCFP)
The RCFP is one of NASF's top priorities. As more and more people leave urban areas to build homes in forested rural settings, there is increasing concern for the safety and protection of their lives and property. Fire protection for improvements in rural areas will depend increasingly on training volunteer and small community fire departments to fight both wildland and structural fires. The Rural Community Fire Protection Program provides financial and technical assistance to train, organize and equip rural fire departments.

In the past, available funds have not been able to meet more than one out of ten requests for assistance. To better protect and reduce the loss of life and property, NASF strongly recommends RCFP be funded at its full authorization level of $7 million.

Renewable Resources Extension
The Renewable Resources Extension appropriation is targeted to support the nation's need for a continuous supply of forest resources. It is a necessary link in the transfer of needed forest technology to nonindustrial private landowners as well as industry and business enterprises involved with management.

NASF recommends that this program be funded at last year's level of $2.7 million.

McIntire/Stennis Research
Research and newly improved technologies are critical to increasing the efficiency and productivity of forest management and development. McIntire-Stennis Research funding provides assistance on a matching basis to land-grant colleges, agricultural

experiment stations and other state-supported colleges or universities offering forestry education. The program recognizes the needs of individual states and regions which depend primarily on state universities and the U.S. Forest Service to provide research and a technology base. This unique state-federal-university partnership in forestry research has added significantly to the overall productivity and health of our nation's forests.

NASF recommends an increase for this program to a level of $25 million in FY 1991. The State Foresters believe this level is needed to insure the continued effectiveness of this Act to significantly strengthen the role of technology in increasing forestry competitiveness while providing greater non-commodity benefits from our forestlands.

Agricultural Conservation Program (ACP)
The ACP provides cost-share assistance to landowners implementing practices that prevent soil erosion, conserve water quality and enhance forest resources. Under the forestry section of the ACP, over 9,000 landowners in FY 1988 were assisted with tree planting on 156,170 acres and 38,394 acres received timber stand improvements. Cost-share for these forestry practices was approximately $9.4 million. Although only 5.3 percent of the total ACP appropriation for FY88, the accomplishments were quite substantial.

NASF recommends this program be funded at $176 million for fiscal year 1991.

Forestry Incentives Program (FIP)
It is a fact that more acres are being harvested than reforested in many parts of the country. It is not hard to identify the obstacles a small forest landowner faces when considering reforestation: significant cash outlays, high interest rates, long-term cash commitments, cyclic markets and little, if any, investment protection.

Although a relatively small program, FIP has helped in removing some of these obstacles to landowners, at the same time improving forest resources and helping to assure future timber supplies. In FY88 over 5200 landowners entered into cost-share agreements for reforestation and timber stand improvement under FIP. Over 157,400 acres of trees were planted and 29,389 acres of timber stands were improved.

NASF supports the Administration's proposed funding level of $12.4 million for fiscal year 1991.

Conservation Reserve Program
The Conservation Reserve Program is responsible for the planting of over 2.2 million acres of trees in this country since 1986. The State Foresters are proud to be a part of this effort. However, these acres amount to only about 6 percent of total acres contracted under the CRP. The program has demonstrated its cost-effectiveness in reducing both soil erosion and surplus agricultural commodities. In addition, acres planted to trees will provide long-range timber production and other environmental benefits for many years to come. NASF supports continued funding for the Conservation Reserve Program at a level that will achieve the 12.5 percent goal mandated by Congress.

NATIONAL ASSOCIATION OF STATE UNIVERSITIES AND LAND-GRANT COLLEGES–EXTENSION COMMITTEE ON ORGANIZATION AND POLICY

STATEMENT OF KENNETH R. BOLEN, DIRECTOR, COLORADO STATE UNIVERSITY COOPERATIVE EXTENSION

My name is Kenneth Bolen. I am Director of Colorado State University Cooperative Extension located at Fort Collins, Colorado. Today I am representing the Extension Committee on Organization and Policy (ECOP) to present the FY91 budget request from the state partners of the Cooperative Extension System.

As you are aware, the Cooperative Extension System (CES) includes and is linked to the federal partner through the Extension Service (ES) - USDA. It was created in 1914 with the purpose of improving economic and social conditions in rural America. This purpose would be accomplished through educational programs conducted in communities through a partnership among the federal, state and local governments. The key element of this visionary concept was the linkage of the knowledge and research capacity of the land-grant universities to the needs of the public.

At first, our work focused on improving agriculture (then the mainstay of the economy), assisting rural families through promoting better nutrition and home management, encouraging rural young people to have high aspirations through youth development programs like 4-H, and helping rural community leaders develop leadership and create services necessary to the people. As the economy has changed in rural America, and as the population has shifted to towns and cities, Extension programs have changed to meet different social and economic conditions, always remaining true to the basic charter in the Smith-Lever Act--"to aid in diffusing among the people of the United States useful and practical information...and to encourage (its) application..."

The Cooperative Extension System is focusing increased attention on five important national initiatives: Water Quality and Management; Revitalizing Rural America; Youth at Risk; Improving Nutrition; Diet and Health (with special emphasis on food safety and quality); Competitiveness of American Agriculture (with special emphasis on two issues: sustainable agriculture and international marketing).

ES-USDA FY91 Budget Request
National Association of State Universities and Land-Grant Colleges (NASULGC)

	FY90 Appropriation After Gramm-Rudman-Hollings	FY91 NASULGC Request
Base Programs	$265.054.000	$282.708.000
Specified Programs	90.170.000	90.043.000
National Initiatives	5.211.000	38.000.000
Federal Administration	8.745.000	5.697.000
Total	$369.180.000	$416.448.000

Base Funding

The Cooperative Extension System is made possible through a federal, state and local government partnership with each entity sharing in program decisions and funding commitments. The base funding at the federal level includes: Smith-Lever 3b and c; 1890 Institutions and Tuskegee; and District of Columbia Extension.

The erosion of base funds by more than 20 percent in real funding levels. over the past ten years. impairs the ability of the system to maintain the core staff and programs needed to respond to the critical needs of the Extension clientele. We appeal to you to reverse the erosion in base funding to help us maintain the basic infrastructure of the Cooperative Extension System.

Federal funds appropriated to support base programs are matched by more than two dollars for one with state. local and private sector support. Currently with the Cooperative Extension System each $3.00 in federal Smith-Lever funds leverages in excess of $7.00 in state. county and other public or private sector funds.

Although the total increase requested for Smith-Lever Formula 3b and c funds is approximately 6 percent. the request for the 1890 Institutions and Tuskegee is somewhat greater due to their unique needs and their funding structure not requiring state matching funds.

A recently completed systemwide planning effort identified priority national initiatives for Extension programs. Additional federal funds are requested to focus on the following:

National Priorities

Water Quality and Management

An expanded role in water quality education consistent with plans for water quality programs under a government-wide initiative is reflected in the proposed $10.3 million increase for 1991. Extension funds would continue to support eight demonstration projects and 37 hydrologic units started in 1990 and would expand those programs to cover additional sites in conjunction with the Soil Conservation Service. Funds would also support additional training for state Extension professionals to better enable staff to interpret and transfer results of water quality research programs.

Youth at Risk

A new $10 million youth at risk program is proposed to finance Extension participation in comprehensive prevention/intervention projects in both rural and urban communities or neighborhoods with serious risk factors such as poverty. high incidence of drug use. teen pregnancy and welfare dependence. Projects to be supported would involve community-based organizations and local. as well as other non-federal. sources of funding. Projects would be comprehensive and intensive. including significant efforts on early childhood development. There would be commitments to sustain the projects over a period of years and there is a commitment to evaluation as the projects go forward.

Food Safety and Quality

There is increased concern among consumers and producers about chemical residues. microbial contamination and other food safety issues. This has increased the burden on the Cooperative Extension system to provide information in, this important area. We are requesting $5 million to provide for educational efforts with producers to help avoid violative levels of animal drugs and pesticides and to assist consumers in understanding safe food handling practices.

Revitalizing Rural America

This initiative is to improve educational support to help revitalize rural America through a variety of efforts. Management and marketing education. increased emphasis on the retention and expansion of existing businesses. assistance in devising new institutional arrangements to meet family and community needs and efforts to increase and develop the leadership pool. A wide variety of audiences are. and would continue to be.

involved--business owners and operators, local community leaders, local and state government officials and others. Our request is for $5 million to address this national priority.

Competitiveness and Sustainable Agriculture

The Cooperative Extension System is conceptually tuned to sustainable agriculture and is heavily involved in the initiation and adoption of programs that are environmentally sound, economically feasible and socially acceptable. The Cooperative Extension System is working closely with the Cooperative State Research Service, the State Agricultural Experiment Stations and other organizational entities with mutual interests. We support the $4.5 million budget request included in the President's executive budget for the Cooperative State Research Service to develop a joint research/extension program to support sustainable agriculture. In addition, the Cooperative Extension System is requesting $2.5 million to support Extension's collation of existing best management practices and implementation into practical sustainable systems.

Other Special Programs - Smith-Lever 3d

Integrated Pest Management

The Integrated Pest Management (IPM) Program is a systems approach implemented to reduce pest losses and pesticide use. IPM has utilized computer decision making at the farm level to deal with complicated pest infestation and adjustment factors and thus improve environmental decision making. Both farmers and private sector agri-businesses are involved. For FY91 our budget request in support of IPM is $8,250,000.

Farm Safety

Over the last decade an annual average of 1800 rural Americans were fatally injured in farm or ranch accidents. Moreover, an estimated 180,000 disabling injuries and 1,800,000 accidents serious enough to require medical attention also happened to farm or ranch residents. The Cooperative Extension System requests $970,000 to continue this national safety education program.

Urban Gardening

The urban gardening program enables metropolitan residents to grow their own fresh fruits and vegetables, thereby improving their self reliance and out-of-pocket food costs. Community development and greater cooperation, as well as personal involvement in group goals result from urban gardening participation. Estimates from previous years indicate that $20 million annually in fruits and vegetables are grown in urban gardening programs of Extension nationwide. Urban families, especially the young, elderly and unemployed not currently engaged in gainful endeavors, are the primary audience for urban gardening. The NASULGC FY91 budget request for this program is $3.5 million.

Expanded Food and Nutrition Education Program

Americans increasingly are aware of the importance that diet and nutrition play in preventing disease. The nation's 35 million people who daily live in poverty often lack minimally adequate diets for their families. Without proper nutrition, resultant poor health, rising health care costs, inability to work, job absenteeism, prevent the poor from rising above their conditions. The Expanded Food and Nutrition Education Program helps low income families acquire knowledge and skills needed to attain better nutrition in their homes. The Cooperative Extension System requests $58,635,000 to continue this program at the current level of participation. If this request is approved, professional and paraprofessional staff of the Cooperative Extension System will continue to implement proven and innovative methods for increasing adoption of sound food and nutrition practices among limited resource audiences.

It should be noted that the National Association of State Universities and Land-Grant Colleges opposes the imposition of the matching requirement proposed for this program in the executive budget. Such a requirement could result in the reduction or elimination of this program in areas where it's most needed.

Rural Development Centers

Rural Development Centers have been prominent in identifying America's non-metropolitan needs in basic and applied science. Their role in drawing resources together for study and action have made them unique assets in technology transfer and in raising citizen and academic awareness of changing conditions in rural America. The budget request is for $950.000 for FY91 to continue the Rural Development Centers at the current level of operation.

Pesticide Impact Assessment

U.S. agricultural production is heavily dependent on chemicals for protection against pests. Potential crop losses range from 25 to 50 percent of harvests. The American public wants economical and abundant agricultural products. but also seeks a safe. contaminate-free environment. Federal and state laws require all pesticides be reviewed and environmental impacts be considered by the Environmental Protection Agency and U.S. Department of Agriculture scientists. Professionals in the Cooperative Extension System are instrumental in making the current review and control system for pesticides workable. The FY91 budget request for Pesticide Impact Assessment is $3.580.000.

Additional Extension Authorizations

Pacific Rim Project

The Agricultural Development in the American Pacific (ADAP) Project is focused on supporting three basic efforts between and among four Pacific territories and the state of Hawaii. Those efforts address unique communication problems associated with widely dispersed populations. the upgrading of staff qualifications and the sharing of staff between and among institutions. The FY91 budget request is for $650.000 to continue this program at the current level of operation.

Renewable Resources Extension Act

The Renewable Resources Extension Act authorizes funds to support programs of technology education to help owners and managers protect. regenerate and improve the productive potential of privately owned forest and rangelands. The Cooperative Extension System is requesting an increase in funding from the current level of $2.744.000 to the FY91 request of $4 million. This increase would allow an expansion of this needed educational program to expand and improve renewable resources which are currently subject to depletion and deterioration when not carefully managed.

1890 Extension Facilities

The Cooperative Extension System is requesting $9.508.000 in FY91 to continue the acquisition and improvement of Extension facilities and equipment at 1890 institutions and Tuskegee as authorized in the Food Security Act of 1985.

EXTENSION FUNDS
(Thousands of dollars)

	FY 90 Appropriations GRH	FY 91 Executive Request	FY 91 NASULGC Recommendations
BASE PROGRAMS			
Smith-Lever 3b and 3c Base Programs	242,272	246,535	256,808
D.C. Extension	946	1,000	1,000
1890 Colleges & Tuskegee U.	21,836	23,092	24,900
TOTAL BASE PROGRAMS, EXTENSION	265,054	270,627	282,708
NATIONAL EXTENSION INITIATIVES			
Water Quality & Management	5,211	15,500	15,500
Improving Nutrition, Diet & Health			
Food Safety and Quality	0	2,000	5,000
Revitalizing Rural America	0	0	5,000
Competitiveness of American Agriculture			
Sustainable Agriculture	(4,450)[a]	0	2,500[b]
Youth-at-Risk	0	10,000	10,000
TOTAL NATIONAL EXTENSION INITIATIVES	5,211	27,500	38,000
SPECIFIED PROGRAMS[c]			
Expanded Food and Nutr. Ed. Program (EFNEP)	58,197	21,600	58,635
Rural Development Centers	943	0	950
Integrated Pest Management	7,110	7,164	8,250
Pesticide Impact Assessment	2,561	3,580	3,580
Financial Management	1,416	0	0
Urban Gardening	3,474	0	3,500
Farm Safety	963	0	970
Pacific Rim Program	645	0	650
1890 Extension Facilities	9,437	9,508	9,508
Renewable Resources Extension Act	2,744	0	4,000
Farmer Assistance Grants	3,325	0	0
TOTAL SPECIFIED PROGRAMS	90,815	41,852	90,043

EXTENSION FUNDS (continued)
(Thousands of dollars)

	FY 90 Appropriations GRH	FY 91 Executive Request	FY 91 NASULGC Recommendations
Federal Administration, Direct	8,745	5,697	6,347
Pacific Rim Program	(645)	0	(650)
NET FEDERAL ADMINISTRATION	8,100	5,697	5,697
TOTAL EXTENSION	369,180	345,676	416,448

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[a] See Low Input Sustainable Agriculture under Research

[b] New program for Extension only.

[c] Established from time to time to address specific acute problems.

NATIONAL CATTLEMEN'S ASSOCIATION

STATEMENT OF TOM COOK, DIRECTOR, INDUSTRY AFFAIRS

The National Cattlemen's Association is the national spokesman for all segments of the beef cattle industry--including cattle breeders, producers and feeders. The NCA represents approximately 300,000 cattlemen. Membership includes individual members as well as 47 affiliated state cattle associations and 26 national breed associations.

The National Cattlemen's Association appreciates the opportunity to present its views on the Administration's 1991 budget for the U.S. Department of Agriculture and related agencies. We believe the budget proposed, in a general sense, is realistic and addresses many of our concerns.

We have long believed the federal deficit must be reduced. One way to do so is to cut federal spending. The USDA has taken its share of budget cuts for many years. While we recognize the reality and are willing to accept it, it is unfortunate that some programs and policies are being driven solely by budgetary constraints.

There are instances where program spending should be looked at as an investment to the future, or for longer term savings.

Following are some of our concerns and recommendations as they relate to specific agencies and programs:

Marketing and Inspection Services

Agricultural Marketing Service

Easy access to available price and volume information by producers is critical for maintaining a competitive, free-market system. NCA supports AMS efforts to increase reporting of contracted and formula priced cattle consistent with changing production and marketing procedures in the industry.

NCA encourages AMS to continue increased efforts to expand verified reporting of boxed beef sales and to begin reporting a price (or index) for Boxed Beef Carcass Units (BCUs). The AMS decision to discontinue reports of carcass beef trade on June 30, 1990 and AMS efforts to improve the boxed beef cutout series are applauded.

Animal Plant Health Inspection Service

The NCA is vitally interested in the programs of the APHIS. This agency is responsible primarily to protect the nation's livestock industry from dangerous diseases and pests, particularly the introduction of foreign animal diseases.

The brucellosis eradication program continues to make significant progress. We appreciate the fact that Congress restored previously cut funding in the 1990 budget. The requested level for 1991 of $64.6 million dollars recognizes the need to continue this program. However, this past year the NCA and other industry organizations endorsed a Rapid Completion Plan for Eradication of brucellosis. This plan would accelerate the program to a quicker conclusion whereby every state would either be free or in the process of qualifying to be free within five years. We urged the USDA to include funding for the Rapid Completion Plan in the 1991 budget. This was not done.

The NCA requests Congress to appropriate the funds necessary to establish the Rapid Completion Plan for brucellosis.This is a case where we believe additional funding now will mean substantial savings in the future.

The NCA supports the increases in the Animal Damage Control program. At our recent annual meeting, our members adopted policy that urges the federal government to substantially increase funding for animal damage control research by appropriate natural, toxic and mechanical means. Our members also resolved that the percentage of the ADC field operation budget in fiscal year 1987 be considered the minimal acceptable level of the field operation budget for subsequent years.

Food Safety and Inspection Service

The NCA has no specific recommendations to the budget proposal by the Administration for the FSIS. However, we do have some comments to make regarding FSIS programs.

The consumer is the ultimate beneficiary of our federal meat inspection program. No other product is inspected more than meat and poultry before it reaches the consumer. Our USDA/FSIS inspection program is the envy of the world. Cattle producers are proud of this program. It's effectiveness and acceptability is imperative to the favorable image of our product.

From a more practical standpoint, the program must be funded sufficiently to run throughout the year. Furloughs and shut downs for money shortage reasons of the meat inspection activities are unacceptable. Such work stoppages will create economic havoc throughout the entire system all the way back to the producer.

Fish inspection, or lack of it, is currently being debated in Congress. The NCA recognizes the importance of federally mandated food inspection programs. We believe that if there is to be a fish inspection program, it 1) must be administered by the USDA and 2) that it be funded with public monies and 3) it be mandatory.

Packers and Stockyards Administration

The beef industry is in the midst of significant structural change. Mergers and acquisitions within the beef packing industry have resulted in four firm concentration ratios over 65 percent. While it appears that these trends are the result of economic forces, concerns have been raised about the evolving structure of the industry and continued competitive pricing of beef products. Ongoing surveillance is necessary because of the increased potential for price manipulation or selective price reporting.

The NCA supports the Administration's proposal to increase P&SA funding to $10.7 million so that they may continue the responsibility for ensuring that livestock markets are free from unfair or deceptive practices. NCA encourages redistribution of P&SA budget priorities to increase auditing of auction market custodial accounts on an unannounced basis.

Economics

Economic Research Service

The beef cattle industry has become increasingly aware that a multitude of government policies and programs affect its structure and profitability. Government grain programs, foreign trade policy, and tax policies in addition to federal monetary and fiscal policies are not directly targeted at the livestock industry but have major implications for the economic well-being of livestock producers. Other issues including food safety, environmental concerns, concentration of the packing industry, impacts of biotechnology, alternative marketing systems, and risk management are of vital economic concern to the beef cattle industry.

Current, relevant and unbiased research is critical to entrepreneurial producers' financial survival in the evolving economic environment. The NCA supports the proposed funding level for the Economic Research Service, with the provision that the ERS actively seek and adhere to input and advice from the beef cattle industry defining relevant research,topics. NCA supports continued funding for publication of its cow/calf production cost series. ERS is encouraged to evaluate cost of production series, to modify services consistent with current production practices and to publish services on a more timely basis. NCA supports an ERS budget increase of $2.1 million to expand water quality, related data collection and related economical policy analysis.

National Agricultural Statistics Service

The beef cattle industry is the largest sector of U.S. agriculture. In the absence of government income assistance programs, beef cattle producers bear the full impact of decisions based on faulty or ill-timed reports. Accuracy and timeliness of NASS livestock and crop reports are crucial to cattlemen making major business decisions.

To address the above concerns, NCA requests that NASS:

1) maintain existing data series
2) consider adding or amending data series to reflect changes within the industry
3) strive to improve the accuracy and timeliness of all reports.

NCA supports continued public funding for these reports at proposed levels and requests continuous input into its cow/calf cost-of-production survey to be considered in 1991.

Science and Education

Agricultural Research Service

NCA supports the proposed budget increases for ARS research activities of $45.0 million. ARS has clearly established itself as a problem-solving research agency. The agency has been very responsive to the research needs of agriculture, including the beef cattle industry.

The nation's cattlemen recognize and appreciate the proposed $5.0 million increase in the Animal Science budget, however, they also recognize the continuing inequity in the ARS budget between plant science and animal science research as reflected in the $13.2 million increase in plant science. Farm income from the sale of animals is approximately equal to income from the sale of plant products. Yet plant research receives more than double the amount of support from ARS. We urge Congress to correct this problem so that animal science research reflects the importance of animal agriculture to the economy of the United State. However, NCA wishes to acknowledge and applaud a recent statement make by the ARE Administration to place more emphasis and priority on the research of plants that will directly enhance animal production.

Cattlemen are deeply concerned that American and foreign consumers have confidence in the safety and wholesomeness of beef. We have every reason to be proud of beef's safety record, but we believe there is room for progress in this area as with all foods. We therefore strongly support the $10.8 million increase to enhance research regarding bacterial contamination, and the drug and pesticide residuals of meat and dairy products.

Cattlemen too, are aware that farming and ranching practices are under increased scrutiny as potential sources of environmental degradation. NCA supports the $16.6 million increase in the soil and water conservation and other global change projects that will provide advanced scientific technical assistance and educational programs to producers. NCA ask that these projects develop base-line data on water quality, wet-land conservation, air quality, soil and wind erosion as affected by animal production units, particularly beef production. NCA also ask that these projects determine what effect animal production (particularly beef) has had and will have on different land areas.

Cooperative State Research Service

NCA fully supports the National Research Initiative and proponents efforts to seek first-year funding levels of $150 million. NCA appreciates the administration's proposed $100 million budget for the Initiative and finds the $50 million annual increments increases encouraging. NCA also supports CSRS efforts to administer the Research Initiative funds through the competitive grant system. This is truly a case where this is an investment for the future.

NCA has noted the Administration's recommendations to discontinue special grant funding for Animal Health and Disease. Cattlemen believe this would be a grave mistake for producers and consumers alike. Suggestions to fund Animal Health and Disease through the Animal Science Competitive Grants program would also be a mistake. If this occurs, the remaining disciplines of Animal Science research would not grow any stronger than they have under previous budgetary restraints. In light of these concerns, NCA encourages Congress to support the Animal Science Competitive Grants Program as proposed in the National Research Initiative and restore Animal Health and Disease Special Grants and 1433 funds.

Extension Service

NCA supports the ES efforts to become a more "issue oriented" agency providing opportunities of information sharing and technology transfer for producers and consumers alike. However, NCA believes the ES coordination, planning and support of urban and rural education and technology transfer programs should relate to "agricultural issues." Therefore, in response to the proposed budget NCA supports the ES in expanding their role in producer/consumer water quality and food safety education.

Before supporting the Youth at Risk program NCA would encourage Congress to seek answers to the following questions:

- Doesn't the Department of Health and Human Services (HHS) have responsibilities and subsequent budget appropriations for counseling on drug abuse, teenage pregnancy, depression and suicide as outlined in the proposed ES Youth-At-Risk Program?
- Has the ES attempted to coordinate the proposed Youth-At-Risk program with that of HSS to safeguard against duplicative effort?
- Given the fact that the federal budget for social programs continue to increase while many line-item budgets for agriculture decrease, aren't the social agencies in a stronger financial position to administer this type of Youth-At-Risk Program?

In the future NCA will fully support all ES programs designed to address consumer concerns regarding food safety, environmental stability, animal care and acceptance of biotechnology. Specifically, NCA recognizes Integrated Resources Management (IRM) as an interdisciplinary systems management programs that will enhance producer education and technology transfer. IRM will benefit producers, consumers, and the professional societies of agriculture by improving production efficiency, competitiveness, soil and water conservation, animal care systems and food safety assurance programs.

Trade

The NCA supports activities and programs that enhance the export of US agricultural products.

We support the Targeted Export Assistance Program. It has been very beneficial to our industry, particularly with increased sales to Japan.

We support the Export Enhancement Program for trade policy purposes. EEP should be used to counter the unfair trade practices of other countries. To date, no EEP monies have been used for beef, beef products or beef cattle. However, if and when it is appropriate to use EEP monies with our product, we would support such action.

The NCA is opposed to the use of export subsidies. However, there are times such action must be necessary and the EEP is designed for that purpose.

NATIONAL CENTER FOR RESOURCE INNOVATIONS

STATEMENT OF ROBERT J. GRAY, PRESIDENT

On behalf of the National Center for Resource Innovations (NCRI) I would like to thank you for the opportunity to submit testimony to the Committee.

The National Center for Resource Innovations is a private, tax-exempt, nonprofit, educational organization. It was established in order to meet congressional directives to provide a structured, organized delivery program for Geographic Information System technology transfer to local governments. The House and Senate Conferees provided $500,000 in FY'90 [Report number 101-361, November 15, 1989] to CSRS/USDA for the establishment of regional NCRI centers in Valdosta, Georgia; Fayetteville, Arkansas; and a site in the Chesapeake Bay Region.

We are asking the Committee to help us build on our success last year by providing $2.5 million to continue work at the Centers, in addition to providing start-up funds for Technology Transfer Centers at the University of North Dakota and Central Washington University.

The history of this Geographic Information System (GIS) Technology Transfer project goes back six years. At that time, American Farmland Trust (AFT) received a foundation grant to conduct an inventory of GIS technology nationwide. American Farmland Trust became interested in GIS technology because of its usefulness in analyzing resource issues as it relates to farm resources.

Geographic Information Systems (GIS) are computer-based technologies including hardware, software and graphics capabilities. These systems can encode, analyze and display information related to natural resources, property boundaries, and socioeconomic variables. Results of GIS analyzes can be described in reports, tables and most importantly, maps in any scale. For example, at the Arkansas site GIS technology will be used to map ponds useful for fire fighting in rural areas. This type of information is critical to local decision makers involved with rural development, resource management and a wide array of other issues.

AFT discovered during their original research a lack of utilization of GIS technology at the local government level. Reasons included: the cost of computer hardware, a lack of software appropriate to the needs of local government, and a lack of computer knowledge and expertise at the local level. The issue of cost has remedied itself, as computer equipment has plummeted in cost while expanding greatly in capabilities and power. To address the problem of appropriate software, AFT has been involved with the development of GIS software suitable to local units of government. The GIS Technology Transfer project is designed to build technical skill and expertise in the offices of local governments.

It became apparent to American Farmland Trust that transferring GIS technology to local units of government was a bigger job than one small private organization could handle. Thus, AFT approached Congress with the idea to establish five or six regional Technology Transfer Centers around the country, which would provide a conduit for GIS technology and technical expertise to local units of government. This effort serves a mutually beneficial role to both federal and local governments. The amount of environmental analysis and protection required by the federal government for local development has increased tremendously. Yet the tools to effectively perform environmental analyses have not been available to local units of government. The Technology Transfer Centers will help local officials gain access to the technology and data that will improve their efficiency and effectiveness. The Centers will assist local officials to gain access to data already collected by federal agencies, but historically unavailable to GIS software programs within reach of local technical abilities. Ultimately, the Centers will assist in the transfer of appropriate GIS technology which will result in better resource management locally, and better use of data sets already paid for by the taxpayer.

As I previously mentioned, the $500,000 for this years operation has resulted in the start-up of three Technology Transfer Centers. In recognition of the importance of this program, the American Farmland Trust Geographic Information System project was established as a separate nonprofit organization by the title of the National Center for Resource Innovations (NCRI). NCRI, Washington, D.C. site serves as the coordinating office for the Centers, as well as the location for the preliminary work on the Chesapeake Bay. Work at the Washington, D.C. site has included the development of cooperative agreements with USDA-SCS and EPA to begin the work of digitizing National Resource Inventory points in the Chesapeake Bay Region, and the merging of this information with the EPA-REACH file and water quality assessment data bases located in Raleigh, North Carolina. Preliminary planning has begun in the Susquehanna Watershed to begin to develop a model for understanding agricultural land use and its effect on nonpoint sources of pollution.

The Georgia site has begun work on satellite imagery classification, and the improvement of water and soil data sets. One of their primary goals for the GIS project is to protect wetlands and sensitive ecosystems pursuant to federal laws and at the same time encourage economic development that is essential to the region. They too, have been involved with planning for the long term operation of their Center. The Arkansas site has aggressively developed educational materials to promote GIS technology to local officials and for use by other Centers in the NCRI network.

The long range goal of the GIS project is to establish five or six Regional Technology Transfer Centers. The FY '91 appropriation will include funds for the initiation of a Center at Central Washington University and the University of North Dakota. It will enable the three existing Centers to begin building infrastructure for the important job of providing regional technical assistance.

The FY '91 appropriation will fund the following activities:

GEORGIA

- Continue satellite imagery classification;
- Perform a water resources assessment, including developing cooperative agreements with USGS, USDA-SCS and EPA. Understanding wetlands resources is a critical issue in Southern Georgia;
- Improve soils mapping capabilities;
- Provide training and technical assistance to counties along with data base development;
- As funds permit, begin water management work in the Suwannee River Water Management District.

ARKANSAS

- Develop GIS orientation seminars for local officials, other Technology Transfer Centers and other government officials;
- Develop and conduct detailed short courses concerning technical issues;
- Hire an outreach person to work withthe counties to understand GIS technology;
- Train and deploy two graduate students to provide technical assistance to the counties;
- Begin work on a data library to explore the most usable type of data bases for local governments and the best way to transfer this data;
- Perform cooperative research with local units of government, to map fire ponds and Toxic Release Inventory sites (with emergency response routes and prevention planning).

WASHINGTON D.C.

- Complete interpretations of the NRI-SOILS-5 data for the entire Chesapeake Bay Watershed and merge with the EPA REACH file;
- Provide these data sets to local units of government;
- Begin building a model for the Susquehanna watershed to understand the link between agricultural land use practices and nonpoint source pollution;
- Assist with the development of Lebanon County, Pennsylvania Conservation District GIS capabilities for watershed modeling and alternative agricultural systems for ground and surface water protection;
- Set up protocols for assessing water quality data base;
- Provide technical support to the other Centers;

- Provide information, public education, and program oversight.

WASHINGTON STATE

- Assist local units of government in the acquisition and use of GIS hardware and software;
- Provide training to government agencies, local officials and other NCRI personnel;
- Coordinate GIS use by local and county governments over a broad geographic region, including other NCRI sites;
- Develop special purpose GIS software for the special needs of local government;
- Acquire, develop and analyze 1990 Census data for socioeconomic applications.

NORTH DAKOTA

- Study the environmental impact of changing climate, demographics and land use on the lifetime recharge of diminishing regional aquifers;
- Develop accurate definition of the extent of lands under cultivation through the use of satellite remote sensing;
- Improve soils characterization by use of multi-spectral imaging;
- Improve data base management of remote sensing images and large data sets for use by geographically dispersed users;
- Improve regional access to and awareness of GIS applications.

The Centers recognize the importance of establishing additional sources of funding. As the Centers begin functioning, they will explore other sources of revenue such as user fees, private grants, and local and state funding. The Centers in Arkansas and Georgia have already attracted some local funding support and matching funds have been provided from the Resources Inventory Division/SCS/USDA for the Chesapeake Bay Project. Inquiries and requests for GIS information from the counties have already begun to surface, even though the Centers are still in their infancy.

The federal appropriation requested for FY '91 will enable important computer technology to be transferred to the level of government which is at the cutting edge of making resource and land use decisions. In addition, it will ensure better utilization of the data already collected by federal agencies. This is a one-of-a-kind program oriented to enhancing the decision making capabilities of local units of government.

Thank you for this opportunity to submit testimony.

NATIONAL COALITION ON INTEGRATED PEST MANAGEMENT

STATEMENT OF MIKE WALLACE, CHAIRMAN

The National Coalition on Integrated Pest Management (NCIPM) is sincerely concerned and willing to work earnestly toward reducing the source of pesticide pollution in agriculture. This pollution threatens the quality of our water and endangers wildlife. The Coalition also strongly feels that positive steps can be made to reduce pesticide residues in food. The Coalition representing growers, farmer associations, commodity groups, food processors, food marketing interests, pest control operators, private agricultural consultants, environmental groups and consumers (see attached list of Coalition participants) is addressing the problem of source reduction of pesticide pollution in a highly positive way by actively supporting integrated pest management (IPM).

The Coalition firmly believes that IPM systems based upon biological control, host resistance, cultural management tactics and the safe use of pesticides will lead directly to pesticide reduction at its source, the farms and ranches of the United States. We feel that it is time for American agriculture to become more biologically based in the management of pests through the broad scale implementation of IPM. Despite a severe shortage of federal funding support, the Cooperative Extension Service IPM programs have done an excellent job in developing pilot programs that serve as the base for pesticide pollution prevention (see enclosed position paper). Owing to the national priorities of clean water, safe food and wildlife conservation, we believe it is now time to make proven IPM technologies more broadly available across the United States through the Cooperative Extension Service.

Therefore, the National Coalition on IPM is requesting that the Congress of the United States increase federal funding for Cooperative Extension Service IPM from the current level of $7.1 million to $32 million. The increased funds will be used to hire Extension IPM specialist staff to coordinate programs for the express purpose of implementing biologically intensive IPM programs. It is anticipated that about 300 additional IPM specialists will be needed to implement a national IPM program. These IPM programs will focus on pesticide alternative technologies. The IPM programs would involve extensive training of farmers through "on farm" demonstrations of IPM systems, field and classroom workshops, and through the use of high quality, multi-media training materials. Of the $32 million, the Coalition would like to see $2 million used for the implementation of urban IPM programs. Urban IPM programs using similar educational techniques as agriculture, would focus on alternatives to pesticides for controlling pests affecting urban dwellers. We believe IPM is a highly suitable technology for reducing pesticide exposure in structures and on landscapes.

The needed funding increase, we feel, will result in the targeting of proven IPM technology at the source of the problem. Based upon our assessment, the National Coalition on IPM fully expects that pesticides can be reduced by at least 50% or greater depending on selected commodities. As important, IPM will increase grower profitability by significantly reducing the cost of production. For example, a recent USDA evaluation of extension IPM programs involving 15 states and 9 commodities showed that IPM participating growers increased net income by $54 million per year when compared with non-participants. Should IPM be made available to all growers in the 15 state sample area, it was estimated that net returns could be increased by $578 million per year.

Our Coalition understands that the President's Budget is asking for a $40 million dollar funding of the food safety initiative and an increase of $52 million for the water quality initiative. We feel that both initiatives are very worthwhile, however, we observe that none of these funds is targeted for getting technology to the grower that could greatly reduce or eliminate the problem through IPM. Cooperative Extension Service IPM program funding (Smith/Lever 3(d)) has been essentially flat for the last 11 years. It is our recommendation that $32 million we request for IPM could come from existing food safety, water quality or other initiatives.

The National Coalition on IPM strongly urges your support for increasing Cooperative Extension Service IPM funding (Smith/Lever 3(d)). We believe that an expanded IPM initiative is a positive step toward source reduction of pesticide pollution with the added bonus of increasing farmer profitability. Thank You.

Working for Safe Food, Clean Water and Wildlife Preservation

Through

Expanded Implementation of Integrated Pest Management

The National Coalition on Integrated Pest Management, representing growers, farmer associations, commodity groups food processors, food marketing interests, pest control operators, private agricultural consultants and environmental interest groups and consumers is addressing the problem of food safety, water quality and wildlife preservation through expanded implementation of integrated pest management (IPM) programs. The Coalition firmly believes that IPM systems based on biological control, host resistance, cultural management tactics, and the safe use of pesticides will lead directly to safer food, cleaner water and preservation of wildlife. In order to achieve the goal of safe food, clean water and wildlife preservation, the National Coalition on Integrated Pest Management recommends and strongly supports increased federal funding for the Cooperative Extension Service IPM Programs. The Cooperative Extension Service has an existing organizational framework and an outstanding track record in the transfer of IPM technology to producers of U.S. commodities. Therefore it is recommended that United States Department of Agriculture IPM funding be increased to the following levels :

Technology Transfer

Cooperative Extension Service
USDA Smith-Lever (3d): $ 30 million — Agricultural IPM
2 million — Urban IPM
TOTAL $ 32 million

The National Coalition on Integrated Pest Management will work as a partner with the United States Congress and USDA in meeting the national mandate for safe food, clean water and wildlife preservation through IPM.

An Executive Summary

The National Coalition on Integrated Pest Management (NCIPM) represents a novel partnership between the agricultural community and government. The Coalition was formed in response to the public's increasing concern over safe food, water quality and wildlife conservation. The Coalition represents growers, farmer associations, commodity groups, agricultural consultants, food processors, food marketing interests, pest control operators, environmental groups and consumers who desire to work closely with federal and state agencies to advance the implementation of integrated pest management (IPM). IPM is the best approach to ensuring a healthy environment while keeping U. S. agriculture competitive. IPM is based upon sound biological and ecological principles. *IPM is a pest population management system that uses all suitable techniques, such as natural enemies, pest resistant plants, cultural management and pesticides in a total crop production system to anticipate and prevent pests from reaching damaging levels.* Equally important, IPM programs have a 15 year track record of significantly reducing pesticides and increasing net profit for American agriculture while maintaining quality and yield.

Safe food, clean water and wildlife conservation is viewed as a public mandate. The Coalition wishes to maintain and improve the safety of food and water for present and future generations. This means that over the next 10 to 15 years, the agricultural community will have to change from systems that rely heavily on pesticides to prevent pest damage to biologically based IPM systems. These new systems, termed *Bio-Intensive IPM*, will use biological control, host resistance and cultural management as primary tactics for the control of pests. Pesticides in Bio-Intensive IPM systems will be environmentally safe and used secondarily and only when specifically warranted.

To accomplish this difficult transition NCIPM is strongly supporting expanded federal funding for the Cooperative Extension Service (CES). To achieve the goal of a healthier environment, IPM programs must be made available to all U.S. farmers. The CES, working with the agricultural community, has already established itself as the national leader in implementing IPM programs. The CES has staff, facilities and functional IPM programs operating in every state. The Coalition is asking that CES be given additional funding to expand their IPM programs throughout the agricultural community from production, to processing, through retail sales and on to the consumer. Also, CES IPM programs must be made available in urban areas to manage pests attacking structures and landscapes and to educate city dwellers on the value of IPM in agriculture.

In addition to an increase in funding for CES to adequate levels to ensure the availability of IPM programs, the responsibilities of other sectors of agriculture are outlined. The state Agricultural Experiment Stations and CES need to respond to the challenges of the future by developing and implementing Bio-Intensive IPM systems. Producers must be heavily involved in the planning stages and in the actual implementation of programs. Private agricultural consultants, pest control operators and lawn care managers must work closely with CES to provide high quality IPM services. The agricultural chemical industry must continue to respond by developing environmentally safe and effective pesticides. Food processors, retail grocers and grower marketing orders must re-examine cosmetic standards for food to allow more field use of IPM without loss in food quality. Consumers must recognize that IPM is a rational approach for a continuous supply of high quality food. And finally, federal and state governments must support IPM and look to the future by increasing funding for IPM development and implementation.

IPM programs can provide the public with safer food, cleaner water and an abundant wildlife while keeping U. S. agriculture financially competitive. The National Coalition on Integrated Pest Management is striving to achieve a solid agricultural community-government partnership to make the widespread use of IPM a reality.

Participants
National Coalition on IPM

Texas Pest Management Association
American Farm Bureau Federation
Pioneer Hi-Bred
Ocean Spray Cranberries, Inc.
Del Monte Foods
National Alliance of Independent
  Crop Consultants
General Mills, Inc.
National Food Processors Association
Curtice-Burns Foods, Inc.
Gerber Products Co.
Food & Marketing Institute
National Association of Wheat Growers
Natural Resources Defense Council
Center For Resource Economics
National Wildlife Institute
John Taylor Fertilizers
A. Duda & Sons, Inc. (Fla)
Campbell Soups, Inc.
Grocery Manufacturing Association
Institute of Food Technologists
Pennsylvania Apple Marketing Board
National Pest Control Association
Pesticide Public Policy Foundation
National Association of State
  Departments of Agriculture
Purdue University
Clemson University
Texas A & M University
National Association of State Univ.
  & Land Grant Colleges
Oklahoma State University
EPA/OPP
EPA/FOD
EPA/SCS
EPA/IPM
EPA/ORD
Extension Service USDA
USDA/ERS
USDA/ARS
USDA/CSRS
USDA/APHIS

The Coalition has also contacted and expects involvement from:

National Corn Growers Association
National Soybean Association
Wholesale Grocers Association
Almond Growers of California
Sunkist, Inc.
National Cattlemen's Association
United Fresh Fruit & Vegetable
Association
Frozen Fruit Institute
National Wildlife Federation
Sierra Club
Rodale

Integrated Pest Management

A National Evaluation of Extension Programs

Integrated pest management (IPM) educational programs have been funded by Federal Extension and conducted through the Cooperative Extension Service since 1971. The adoption of IPM by U.S. growers represents a signal success in ability of the Cooperative Extension Service to effectively and efficiently transfer technology. A recent national evaluation of these programs was conducted by Virginia Cooperative Extension Service and cooperating states under a cooperative agreement with Federal Extension. Selected highlights of this national study are provided.

- From 1973 through 1983 the Federal Extension Service allocated approximately $7 million per year (for all 50 states and 3 protectorates) specifically for IPM.
- The evaluation study only considered approximately 3500 growers (covering 15 states and 9 commodities), IPM users experienced a total difference in net returns over non-users in excess of $54 million per year.
- Extrapolated to the 15 state, 9 commodity farm segment examined in this study, IPM experienced an increase in net returns of over $578 million per year.
- Privatization of some aspects of IPM has resulted in a tremendous expansion of pest management consulting firms. These firms may realize estimated gross revenues in excess of $400 million for the 15 state study area.
- Extension programs incorporated over 27 million acres of U.S. crops.
- It was found that IPM reduces pest control costs, reduces chemical use, reduces the risk of crop loss, and reduces impacts to human health and the environment.
- A wide variety of educational techniques were used for successful IPM technology transfer. The study showed bulletins, handbooks, and manuals were very useful to clientele, private consultants and Extension personnel.
- Face-to-face contact by Extension specialists with individuals and through small group meetings was rated high. Those that had experience with electronic technology thought it quite useful.
- Private pest consulting firms using Extension IPM programs as a model recognized the important, ongoing role of Extension in the delivery of advanced technology.
- Extension should place greater emphasis on increased efficiency and profitability as a valid rationale for increased IPM use by growers, particularly in reaching the goal of low-input, sustainable agriculture.
- A Maryland urban study showed success in delivering IPM to the urban and suburban population. Further expansion of the concepts and practices of IPM with urban clientele offers tremendous potential for minimizing pesticide misuse.

—The National Coalition on Integrated Pest Management—

Working for Safe Food, Clean Water and Wildlife Conservation
Through
Expanded Implementation of Integrated Pest Management

The National Coalition on Integrated Pest Management (NCIPM), an agricultural industry-government partnership, was formed to support and promote the implementation of integrated pest management (IPM) in the United States as a biologically and environmentally sound approach to pest control. The primary formation of the Coalition was in response to the public's concerns over safe food, clean water and wildlife conservation. The Coalition represents growers, farmer organizations, commodity groups, agricultural consultants, food processors, food marketing organizations, pest control operators, environmental groups and consumers who desire to work closely with federal and state agencies to advance the implementation of IPM. Integrated pest management is a pest population management system that uses all suitable tactics, such as natural enemies of pests, pest resistant plants, cultural management and pesticides in a total crop production system to anticipate and prevent pests from reaching damaging levels. Integrated pest management programs have an outstanding track record of reducing pesticide use, thus ensuring safer food, water and wildlife conservation. The Coalition wishes to maintain and improve the safety of food and water for present and future generations through strongly supporting IPM programs.

The National Coalition on Integrated Pest Management seeks to improve dialogue and coordination among U.S. government agencies concerned with IPM by developing a working partnership with the United States Department of Agriculture, the Cooperative Extension Service and the State Agricultural Experiment Stations, and the Environmental Protection Agency, Through this industry-government partnership, the coalition is striving to make food producers, agricultural industries, food processors, the retail sales industry, policy makers and consumers aware of the benefits of IPM. The Coalition recognizes the critical national need to increase funding for expanding IPM educational programs carried out by the Cooperative Extension Service (CES) and to use these programs as the vehicle to increase IPM implementation. Finally, the Coalition wishes to become a full partner in the planning process to identify national priorities for agriculture and urban IPM programs. The coalition is fully prepared and willing to seek increased federal, state and industry funding to develop and deliver IPM in the U. S.

Public Concern: Pesticide Contamination of Food, Water and Wildlife

Recent concerns involving pesticide residues in food, groundwater and natural impacts on natural resources have substantially heightened public awareness regarding the safety of the food we eat and the water we drink. Public policy makers are deeply concerned about human and environmental health and wish to make cogent decisions to protect U.S. food and water supplies for the future. Pesticide use in U.S. agriculture has continued to increase over the last 10-15 years. National surveys indicate that the majority of this increase has been from herbicides as a result of increased labor and fuel costs and for weed control, as well as the expanded use of conservation tillage practices. Conservation tillage practices reduce soil erosion by relying on herbicides for weed control rather than on mechanical cultivation of the soil. Insecticide and fungicide use has increased only slightly within this time frame. Integrated pest management programs, in specific instances, have been shown to significantly reduce pesticide use, thus providing a reasonable response to public concern.

A Response to the Concern Through IPM

Although national pesticide use has increased, there are numerous outstanding examples of ongoing IPM programs implemented through CES. Cooperative Extension Service IPM educational programs have had a substantial impact in reducing pesticide use while maintaining or increasing profits. These programs provide a clear signal of the potential for IPM to deliver on its promise to reduce the unnecessary use of agricultural chemicals.

Cooperative Extension Service IPM programs, funded by USDA, were initiated as pilot programs in several states in the early 1970s. Because of the immediate success in reducing pesticide use and increasing net profits, USDA funding was increased in the mid-1970s to initiate IPM programs in every state and U.S. protectorate. The primary IPM technologies that were transferred included: pest resistant plant varieties, computer simulation models to predict pest population increases, judicious use of pesticides based on field monitoring ("scouting") and economic thresholds, preservation of natural enemies by adjusting pesticide use, and cultural management that depressed pests and favored natural enemies. The overriding goal of many IPM systems was to use pesticides as the last resort after all other alternatives were exhausted.

Outstanding examples of pesticide reduction can be cited from individual state IPM programs. Several fruit and vegetable IPM programs have been conducted by CES in partnership with producers and food processors. Because of the strict cosmetic standards set by government and the retail sales industry, fruit and vegetable producers must rely heavily on pesticides to meet these standards. Despite this constraint, a joint CES-industry (Gerber Foods, Inc. and Campbell Foods, Inc.) program developed for processing carrots in the Lower Rio Grande Valley of Texas reduced insecticide use by 66% (from 6 to 2 applications) without loss in yield or quality. Similarly, within one year, the Texas IPM program reduced the amount of insecticide used on fresh market cabbage by 44%.

A New York state CES IPM program successfully reduced the amount of pesticide use on apples by 38%. The New York IPM program working with onion growers was able to reduce pesticide use by 31%. Potato growers in New York practicing IPM reduced fungicide use by 21% and insecticide use by 7%. California almond growers working with the University of California IPM project have reduced total pesticide use by 37%. Gerber Foods, Inc., in cooperation with the Arkansas and South Carolina CES, funded a pilot peach IPM program which reduced insecticide use on peaches by 33%. Similar industry-CES programs have been conducted with the support and cooperation of Ocean Spray Cranberries, Inc. The Massachusetts, Rutgers, Wisconsin and Washington CES cooperated with Ocean Spray to develop a comprehensive cranberry IPM program. Del Monte Corporation has worked extensively with the University of Wisconsin IPM project on green beans and a variety of other IPM projects. Several other successful cases can be cited across the U.S where the food processing industry and agricultural producers formed productive partnerships with CES.

There are outstanding cases of IPM successes on other major cropping systems. Insecticide use on cotton, grain sorghum and peanuts has been significantly reduced since the introduction of IPM by CES in the early and mid-1970s. For example, in 1971 (pre-IPM) U.S. insecticide use on cotton, grain sorghum and peanuts was 73.4, 5.7 and 6.0 million pounds, respectively. By the early 1980s after 10 years of IPM, insecticide use dropped to 16.9, 2.5 and 1.0 million pounds respectively for cotton, grain sorghum and peanuts. During this period acres planted to these three commodities remained relatively constant. Not only was the total amount of insecticide reduced, but the proportion of acres treated was also reduced. Cotton, grain sorghum, and peanuts experienced a decrease in acres treated by 46%, 48% and 54%, respectively.

Approximately 90% of Indiana's continuous corn acreage (1.0 million acres) is treated with a soil insecticide for corn rootworm control. By rotating corn with another crop, producers virtually eliminated the need for a rootworm insecticide. Fifteen years ago approximately 30% of the acreage was in a continuous corn cropping system. Today this represents only 17%. The reasons for this reduction include: 1) the near equal dollar return from producing corn or soybeans, 2) numerous agronomic advantages with growing these crops in a rotational system, 3) changes in the government program, and 4) the promotion of corn/soybean rotation by Purdue University's IPM program personnel. This amounts to yearly savings in insecticide costs of approximately $7.6 million, but perhaps of greater importance, it represents a reduction of about 800,000 pounds of insecticide applied to Indiana soils.

Another major benefit of IPM has been the significant increase of private agricultural consultants in the U.S. The number of private agricultural consultant firms has risen substantially in the last 15 years. The National Alliance of Crop Consultants represents several thousand private consultants. Private consultants have worked with many CES-IPM programs in the technology transfer process. Private consultant firms will continue to increase in the future and be prime users of IPM technology on behalf of the farmers they serve.

Continued Shortfall in IPM Funding for the Cooperative Extension Service

Presently there are a number of producers who are using good IPM practices, however these are only a fraction of those who could be involved. There are a range of opportunities for expanding IPM technologies. This expansion can only be accomplished through increased emphasis, with associated funding support, of CES IPM programs. The Cooperative Extension Service has an outstanding track record for development and delivery of IPM to agriculture. Federal funding of CES IPM has been constant since 1977. Today, owing to inflation, these resources are worth 50% less than they were in 1977. Every effort must be made at the federal and state level to increase funding for CES IPM programs in order to reconstruct and expand IPM in the U.S. Estimates indicate that pesticide use could be reduced by at least 50% in the U.S. using currently available technology. As new technology becomes available, it must be transferred to the producer through a strong CES program to even further reduce or in certain cases actually eliminate pesticides.

Constraints and Solutions to Wide-Scale IPM Implementation

In addition to a severe CES funding shortage, there are other constraints to implementation of IPM. By expanding CES IPM programs, local or regional constraints, such as perceived risk associated with IPM, increases in management time, demonstration of increased profitability, field demonstration of new IPM technology, and availability of trained private agricultural consultants, can be addressed through balanced IPM educational initiatives. However, there are broader factors that constrain the wide-scale implementation of IPM. Farm commodities produced under the provisions of the federal Farm Bill receive subsidies based upon yields. High yields frequently require larger amounts of pesticides and fertilizer inputs. In essence the farmer is rewarded for producing high yields under chemically dependent agricultural systems. It is counter intuitive to ask farmers to accept lower yields unless it can be demonstrated that net profits can be increased or unless the provisions of the Farm Bill are such that farmers are rewarded for producing commodities under IPM and hence less pesticide. To address this constraint, it is not unreasonable for the federal government to reward farmers for practicing IPM under the provisions of the Farm Bill through federal crop insurance incentives, more flexibility for crop rotation or by awarding additional base acreage for producing commodities under IPM. This approach cannot be successful unless IPM plans provide equal or greater net cash income relative to current production plans.

Commodities, such as fruits and vegetables, that are not considered under Farm Bill provisions could also be rewarded for adopting IPM, such as reduced rates for multiple peril crop insurance. There are no price and income supports for these crops so the government could provide additional subsidies for crop insurance, i.e., a 70% subsidy not 30%. As the trend toward the production of foods free from pesticide residues accelerates in the years to come food producers can be rewarded. Food producers would gain from IPM through reduced production costs, increased prices, and increased profits. Production costs are expected to fall as fewer pesticides are used and yields should remain constant. Prices received by farmers are expected to increase as consumer demand for pesticide-free foods increases relative to the demand for conventionally produced crops. Therefore, profits will increase as prices increase and per unit costs decline.

Another constraint to IPM adoption deals with the general public, the "consumer." While producers and processors of agricultural commodities appreciate the role IPM can play in greatly reducing or eliminating the risk of pesticide contamination of food,water, and natural resources, the U.S. consumer has little or no understanding of IPM. Developing a strong public information campaign is one approach to educating the public on the benefits of IPM. However, most of the general public does not relate to the complexities of agriculture much less IPM systems. The best approach to educating the public would be through the establishment of Urban IPM programs. Pesticides used in the urban environment may contribute to water contamination. Pesticide use also results in direct human exposure to toxic chemicals. Urban citizens can relate readily to pests that attack the structures in which they live and the landscapes that surround them. A national initiative in Urban IPM would provide a broad based public focus. The best way to educate consumers is to involve them in IPM programs for the urban environment and use these programs to not only address structural and landscape pest problems, but to educate the general public about the advantages of an IPM approach. Urban IPM programs can then be used as the vehicle for educating the public on the value of IPM in the urban environment as well as in agricultural systems.

University trained IPM specialists are necessary to expand IPM. Currently several million acres of crops are receiving IPM under the advice of private agricultural consultants. Universities must recruit top quality students and provide them with broad based, practical training in IPM to meet future increasing demands for private consultants, CES specialists and research scientists.

Safe Food, Clean Water and Wildlife Conservation: A Public Mandate

Public pressure for safe food and water and conservation of wildlife will continue to escalate. State and federal governments have and will continue to respond to this mandate through laws that require foods be produced safely and water and wildlife be protected. More extensive requirements will be placed on the registration of future agricultural chemicals to insure the public of minimal risk. Greater costs associated with chemical registration have forced the manufacturers of agricultural chemicals to carefully evaluate the markets. Chemicals for numerous food and specialty crops are considered "minor use" by the agricultural chemical industry and do not constitute a sound market investment. The number of pesticides available for all crops will continue to dwindle in the future.

The U.S. agricultural producer will be caught in a squeeze to produce safer food and fiber with less pesticides. The question is: How will this be accomplished? With the mandate to produce safer foods and to have a cleaner environment, State Agricultural Experiment Stations (SAES) and the Cooperative Extension Service have the principal responsibility to develop IPM systems that rely primarily on biological tactics.

Responding to the Mandate: A Look to the Future for IPM

Integrated pest management, like agriculture, must remain dynamic. The IPM systems developed and delivered in the next twenty years will rely to a much greater extent on biologically based IPM tactics rather than agricultural chemicals. The new IPM systems will be biologically-intensive. We propose, then, the development of ***Bio-Intensive IPM*** programs that will guarantee not only to protect food, water and wildlife from pesticides, but also guarantee profitability to U.S. agricultural producers. It is time Congress and the United States Department of Agriculture support ***Bio-Intensive IPM*** programs that will be acceptable to the agricultural community and successfully adopted.

The future course of U.S. agriculture depends on how quickly the ***Bio-Intensive IPM*** systems can be developed. A bold new step must now be taken to develop and deliver IPM systems that insure a constant and safe food supply without complete reliance upon agricultural chemicals; to ignore this precept would be foolhardy. It is important to note, however, that there are some instances where pesticides are necessary to protect human health. Mycotoxins, for example, are highly toxic compounds produced by fungi that infect grain, oil seed and other crops. The careful use of fungicides to control mycotoxin producing fungi is justified to protect human health. The Cooperative Extension Service and SAES, will need a stronger, cooperative partnership with producers, private agricultural consultants, the agricultural chemical industry, food processors, retail grocerymen, policy makers, and the general public to develop and transfer this new technology. The National Coalition on IPM is willing to lead in the development of this partnership.

Bio-Intensive IPM will rely on three primary tactics to meet its objectives: biological control, host resistance, and cultural management. These three tactics are the cornerstones on which ***Bio-Intensive IPM*** will be constructed. ***Bio-Intensive IPM*** builds on the same philosophical tenets as traditional IPM except the agricultural chemicals used in ***Bio-Intensive IPM*** must be non-disruptive and environmentally safe.

Biotechnology, along with classical breeding, will provide opportunities to alter plants and animals to be resistant to pests. Biotechnology must take advantage of ecological theory applied to agriculture to delay or prevent pest resistance to genetically engineered plants. Host resistance and biological control form a powerful combination for pest suppression. For example, if host resistance can be developed for even one key pest of a particular crop, pesticide use will be reduced and several unique opportunities will be available for biological control. Biotechnology also offers tremendous potential for genetically engineered microbial pesticides that would fit well into ***Bio-Intensive IPM*** systems.

Historically biological control has made significant advances in controlling pests in perennial cropping systems. These advances must now be extended to include greater biological control activity in annual cropping systems. As the theoretical basis for biological control in annual crops is developed and emphasis on biological control expands, more success is predicted. This challenge must be met before biological control can reach its true potential and be useful over the large acreages of annual crops grown in the U.S. Likewise, a creative, scientific revolution must take place in the area of weed control. Weed control, due primarily to high labor and fuel costs, depends most heavily on herbicides. In some areas, conservation tillage systems have forced producers to rely even more heavily on herbicides for weed control. Some biological herbicides have been successfully developed, but more work must be done if solutions to these problems are to be found.

Cultural management options, such as crop rotation, varietal selection, planting dates, tillage practices and water and fertilizer management have provided the agronomic basis for IPM. Under ***Bio-Intensive IPM*** greater demands will be placed on cultural management requiring an increased understanding of the ecology of annual cropping systems.

Systems science will be important for developing ***Bio-Intensive IPM*** systems that meet the biological, economic and environmental objectives of modern agriculture. New tools, such as knowledge based systems, e.g., expert systems, will emerge that integrate crop, pest and economic data to provide critical management information for decision making. Field monitoring (scouting) and computerized forecasting models will continue to be used to evaluate the systems and anticipate future events upon which management decisions will be based.

The Research and Cooperative Extension Service Responsibility

The State Agricultural Experiment Stations have the unique institutional capabilities to conduct the research necessary for formulating the new ***Bio-Intensive IPM*** systems. The SAES-University partnership has traditionally been the genesis of innovative agricultural research; additionally, this partnership has trained students for the science and technology of the future. The interdisciplinary interaction necessary to develop technology for cropping systems and entire ecosystems is present. Further, SAES and CES currently interact directly with the agricultural community thus providing immediate feedback for acceptance of the innovative technology necessary for functional ***Bio-Intensive IPM*** systems.

The Cooperative Extension Service must embrace ***Bio-Intensive IPM*** as its primary educational theme. As we evolve toward ***Bio-Intensive IPM*** systems, CES must serve not only as the deliverer of technology, but must take an even more active role in bringing agricultural producers and private agricultural consultants together with the research community to plan ***Bio-Intensive IPM*** systems that are adaptable and useable in contemporary agriculture.

Of equal importance to managing pests in agriculture is the management of pests in the urban environment. Urban pesticide applications pose a threat to water quality, and the risk of direct human exposure is particularly high. Therefore, SAES and CES must also set a high priority on ***Bio-Intensive Urban IPM*** programs. These programs will allow urban citizens to relate first hand to ***Bio-Intensive IPM*** technology in their immediate environment. A priority of urban IPM programs should be not only to introduce the general public to this new approach, but also to educate them on the positive factors of ***Bio-***

Intensive IPM in agriculture. Urban citizens are the principal recipient of the benefits of ***Bio-Intensive IPM*** through the use of this approach in the urban environment, but equally important, through higher quality food and fiber produced for their consumption by the agricultural sector with less pollutive technology.

The Responsibility of Higher Education

Trained personnel are necessary for future expansion of IPM. Integrated pest management requires broad training in all phases of crop production and management. It is the responsibility of the universities to develop well balanced IPM curricula at the B.S., M.S. and Ph.D. levels to attract the highest quality students into IPM. The universities must become more aggressive in promoting career opportunities in IPM.

The Responsibility of the Private Consultant and Pest Control Companies

The responsibility of large-scale implementation of ***Bio-Intensive IPM*** will be shared with private agricultural and urban (pest control operators and lawn care managers) consultants. ***Bio-Intensive IPM*** will require a high level of management and thus create a greater need for knowledgeable agricultural and urban consultants in the future. The Cooperative Extension Service, working with the research community, private consultants, the farmer and home owner can design, test and evaluate ***Bio-Intensive IPM*** systems; however, the widespread transfer of this technology across the U.S. will require a stronger partnership between private consultants and the agricultural and urban communities.

The Agricultural Producer's Responsibility

Progressive producers of agricultural commodities have already recognized the need to restrict the use of agricultural chemicals. Individual producers and the associations that represent them have been strong supporters of IPM. As we move toward the future, the link between producers and ***Bio-Intensive IPM*** programs must be expanded and strengthened. As farm size continues to increase, there is an increased focus on efficient management. The successful farmer of today, and in the future, must be sophisticated and fully capable of assisting research and CES in setting realistic research objectives that will lead to ***Bio-Intensive IPM***. Early involvement of producers in the development of technology will greatly increase the probability of farmers accepting this technology when it is available.

The Responsibility of the Agricultural Chemical Industry

Perhaps the greatest industrial challenge for innovative and creative work in ***Bio-Intensive IPM*** resides with the agricultural chemical industry. The industry has already taken a leadership role in the development of effective, environmentally safe and non-disruptive pesticides. The advances in microbial pesticides, pest growth modifiers and low-residue, safe conventional pesticides are evidence that the industry is responding to the need. The industry has made a major investment in biotechnology and substantial initial progress has already been made in the area of host plant resistant and genetically engineered microbial insecticides. In light of greater costs for pesticide registration, pesticide resistance, and increasing public concern over the adverse effects of pesticides, the agricultural chemical industry must accelerate research and development of biorational pesticides. Further, the industry must anticipate the development of pesticide resistance, a continual concern. The industry should reexamine its marketing strategy and collaborate with population geneticists to develop resistance management schemes for agroecosystems. Such schemes would prolong the useful life of biorational pesticides by preventing immediate selection for resistant organisms.

The Responsibility of Food Processors and Retail Grocers

The cosmetic standards for fresh market produce and some processed food are frequently far stricter in the market place than required by Food and Drug Administration standards. Strict cosmetic standards set by food processors and the retail grocery industry, as well as grower marketing orders place a burden on the farmer to produce blemish free products. To meet the market's cosmetic standards the producers must use multiple applications of pesticides. Multiple pesticide applications increase the probability of residues on food and also lead to pesticide resistance. Pesticide resistance and declining availability of minor use pesticides clearly indicates that it will be more and more difficult for farmers to meet pesticide-aided cosmetic standards.

The food processing and the retail grocery industry must examine their cosmetic standards. If the standards can be relaxed without loss in food quality, the window of opportunity can be significantly expanded for developing revolutionary ***Bio-Intensive IPM*** programs. Also, retail grocers should take leadership in educating the consuming public about the benefits of ***Bio-Intensive IPM***. There is a definite perceived reward to the retail grocer that provides food which contain little or no pesticides. The consuming public would welcome such information.

Federal and State Government Responsibility

Federal and state governments are responsive to the needs of the general public and the mandate to provide a safe supply of food and water and to conserve wildlife. Federal government could provide a reward to the producer for producing crops under a ***Bio-Intensive IPM*** system. There are pressing and urgent needs for increasing funds for CES IPM programs in order to utilize IPM technology that is immediately available. Increased funding for CES IPM programs is the first step toward a successful ***Bio-Intensive IPM*** system. A segment of these funds should be dedicated to ***Bio-Intensive Urban IPM*** programs to accelerate the education of the American consumer with regards to IPM which will serve to decrease human pesticide exposure. The Environmental Protection Agency and USDA/Cooperative States Research Service must increase funding levels to the SAES as the first significant step in developing ***Bio-Intensive IPM*** programs for agriculture and the urban environment. Funding of these programs would send a clear signal that the federal government is responding to the public mandate for better human health by funding programs that will provide safe food and water, and conservation of natural resources.

Likewise, state government can also respond to the public mandate. A few states have already taken the initiative by increasing SAES and CES funding in the area of IPM. These state governments see the many successes and the potential of IPM for their citizens. The ultimate solution to the current agricultural and urban malady lies in strong SAES research and effective IPM educational programs provided by CES.

The Consumer's Responsibility

Consumers must recognize the public and personal costs associated use of less pesticides. The consuming public must support federal and state expenditures to develop and deliver ***Bio-Intensive IPM*** programs. When informed, the consumer has been supportive of IPM. Their support is even more important as we move into the future with the new bio-intensive programs. Consumer attitudes toward commodities produced under a pesticide umbrella are changing. The past public perception is that foods produced in this manner are free of pest fragments and have virtually no blemishes. The commodities produced under ***Bio-Intensive IPM*** will also produce safe and wholesome food and still maintain pest fragments and blemishes at innocuous levels for most consumers. The trade off is not a teeter-totter where a substantial reduction in pesticide residues is balanced by a significant rise in cosmetic problems at the consumer level. This is an acceptable situation. It only means that CES and the retail grocery industry must form a closer partnership to educate the general public.

In Conclusion

Maintaining a safe food and water supply is the responsibility of agricultural producers, the agricultural chemical industry, commodity handlers, food processors, the retail grocers, and the consumer. Federal and state governments must support expanded implementation of IPM through increased funding to CES. The research base for future Bio-Intensive IPM systems must be broadened in the State Agricultural Experiment Stations. The private consultant must join with CES and the producer to move forward with broader implementation of IPM systems. The National Coalition on IPM on behalf of the agricultural community is willing to form a solid agricultural industry-government partnership to achieve the goal of IPM implementation. A safe food and water supply, as well as a healthy environment, is the public mandate.

NATIONAL COUNCIL FOR VOCATIONAL AND TECHNICAL EDUCATION IN AGRICULTURE

STATEMENT OF RONALD B. BUCKALT, PROJECT COORDINATOR

Mr Chairman and members of the committee, Thank you for the opportunity to submit testimony on behalf of agricultural education. My name is Ron Buckhalt. I am project coordinator for the National Council for Agricultural Education on a program to "infuse aquaculture education into the agriculture education curriculum" in secondary schools across the country.

The National Council for Agricultural Education, a non-profit educational organization, represents over half-a-million people in the agricultural education community including the: National FFA Organization, National Vocational Agricultural Teachers Association, National Association of State Supervisors of Agricultural Education, National Association of Teacher Educators in Agriculture, National Young Farmer Educational Association, Agriculture Division of the American Vocational Association, Postsecondary Agricultural Student Organization and the National FFA Alumni Association. The Council has experience in preparing and delivering educational materials and has ongoing relationships with teacher/educators at the 1862 and 1890 Land Grant Colleges and Universities, other state schools and universities, junior colleges, agriculture research organizations and agribusiness.

In 1917, with the passage of the Smith-Hughs Act, the U.S. government launched a highly successful effort to educate young men and women in and about agriculture. That delivery system, which includes all the organizations listed above, is tried and tested. It works. Some 8,000 high schools across the country have vocational agricultural programs involving nearly 600,000 studcents a year.

The Mississippi Universities Research Consortium is in support of The Council's efforts in aquaculture education in that they recognize the importance of aquaculture to future supplies of quality fishery products to our nation and the need to have people interested in and trained to expand aquaculture in our country. The Consortium has been assisting The Council in this educational project and will continue to be involved.

The Mississippi Universities Research Consortium is made up of the Chief Research Officers from the University of Mississippi, Mississippi State University, University of Southern Mississippi and Jackson State University. This group meets regularly to coordinate projects and other activities between institutions and to advise the Commission of Higher Education and others on the status of research in the State of Mississippi.

The Gulf Coast Research Laboratory (GCRL) which Dr. Thomas McIlwain directs was founded in 1947 and offers educational, research and service opportunities to over 59 affiliated institutions in Mississippi and colleges in 14 other states. The institution is internationally recognized as a specialized institution with a broad marine science curriculum and provides assistance to the seafood industry, related business and a variety of state and Federal agencies and private corporations. Students participate in lectures, laboratory sessions, field work and trips to several nearby aquaculture operations in Alabama, Louisiana and Mississippi. Laboratory advisors have worked with Mississippi Gulf Coast Community College in the establishment of an aquaculture technician program to meet the industry's growing need for qualified and trained personnel. GCRL also serves as part of a consortium funded by USDA to develop domestic shrimp farming . Members of the consortium include: GCRL, Oceanic Institute of Hawaii, Tufts University of Massachusetts, Texas A & M Agricultural Experiment Station, Waddell Mariculture Center of South Carolina, and the University of Arizona. GCRL is affiliated with the University of Southern Mississippi.

Dr. Jasper Lee, Professor and Head of Agricultural and Extension Education at Mississippi State University serves as a consultant to The Council and has been actively involved in our aquaculture education project since 1987. In addition to being a nationally recognized expert in preparing curriculum and teaching teachers, Dr. Lee is also the author of Commercial Catfish Farming which is being revised this year. We have asked Dr. Lee to serve as chief writer for the new aquaculture curriculum. And, as you know, Mississippi State is a leader in aquaculture research and technology transfer.

Aquaculture is one of the largest and fastest growing industries in the state. The current value of catfish sales at the pond bank is over $300 million this year. Approximately 400 producers devote 90,000 acres of ponds to this enterprise. Aquaculture is an integrated industry, with producers often owning feed mills and processing plants, and employing over 3,000 people in the state. Commercial production of redfish, hybrid striped bass, freshwater shrimp and crayfish are developing industries in Mississippi.

Goals and Objectives of The Council's Aquaculture Education Program:
(1) To teach men and women who are interested in agriculture the principles of success in aquaculture. (2) To impart scientific principles and a recognition of the importance of properly managing our aquatic resources (environmental science). (3) To use aquaculture curriculum as a means to interest students in science (including biology and chemistry), and other relevant subjects such as international relations, water quality/quantity, hydrology, mathematics and business management, particularly marketing and quality control. (4) To encourage the integration of aquaculture in subjects taught by other teachers in the educational system and augment greater cooperation among the individuals. (5) To inspire secondary students to enter postsecondary study in aquaculture thereby providing many of the scientists we need. (6) To explore the tremendous potential of aquaculture as alternative crops and livestock in rural communities (rural economic development) (7) To reduce the dependance on foreign imports of fish and fish products. (8) To utilize excess U.S. commodities (corn and soybean) for protein conversion.

Background/Introduction:
There is a tremendous need for students in secondary, postsecondary and adult education to focus their attention on this rapidly emerging industry. Consider the following: First, we are importing more and more fish, shellfish and fish products at higher and higher costs while U.S. and worldwide consumer demand for this high quality protein continues to increase. Second, concern over polluted ocean waters is further increasing demand for farm fresh aquaculture products. Third, aquaculture production utilizes existing U.S. produced commodities as fish feed--corn and soybeans. Fourth, aquaculture offers tremendous potential as alternative crops in rural communities. If we can replace a billion dollars worth of imports it is worth 4 billion in jobs and employment for our people. Fifth, aquaculture education is a means to stimulate American's secondary education students to learn science and math.

Aquaculture products are being grown in the U.S. in our local communities in ever increasing numbers. But to capitalize on, and accelerate the growth of, that industry, we need men and women to enter the aquaculture workforce as trained professionals. And even if these students decide aquaculture is not a career path, we will have imparted scientific principles and a recognition of the importance of properly managing our aquatic resources.

Concern over the future availability of water for rural and urban uses and the impact of human activities upon its quality has intensified in recent years. Water quality has now emerged as one of the top priorities in American agriculture and is a national issue on the minds of political leaders. Program areas to be covered under this aquaculture education proposal include research and conservation. Water is essential for American agriculture. In particular, the emerging and dynamic segment of agriculture called aquaculture, depends on wise and efficient use of high quality water for both plants and animals. Young people and others need to understand the dynamic and changing nature of America's water supply. Teaching about aquaculture and the demands of fish for clean water is a means to impart new knowledge in this area.

Studying aquaculture in our classrooms fits into the agricultural curriculum so well because we can adapt our present agricultural knowledge and management base to fish, shellfish and aquatic plants. The study of feeding and managing fish is not all that different from that of other animals. And growing plants in water is similar to hydroponics now being taught in agricultural education.

Further, preliminary interests indicate that students and teachers are very excited at the prospect of being able to study this new subject in agriculture education. The Council has received numerous request from teachers, superintendents, state departments of agriculture and education and others involved in agriculture for aquaculture materials. Some teachers and school systems are so impatient with the lack of teaching materials they are developing their own programs.

It is clear then that not only will an aquaculture education program teach students about fish, shellfish and aquatic plant culture, but it will also teach them science (including biology and chemistry), international relationships, water quality/quantity, hydrology, mathematics and business management, particularly marketing and quality control.

If the demand for this information is as great as it now seems, we believe there will be considerable integration and cooperation among various disciplines, particularly at the secondary level. That is, biology, science, math and agriculture teachers will share facilities and materials to teach aquaculture science.

Although not the primary purpose of this program, we envision another significant benefit--additional young people will enter postsecondary study in aquaculture. We know that there is a tremendous demand for aquaculture scientists. One of the limiting factors in aquaculture development is, according to one USDA aquaculture specialist,"the industry has outrun its research base." To the extent that early involvement with aquaculture challenges a young person to pursue further education in this area, the industry and America will benefit

The Project:
On August 1, 1989, The Council hired a qualified education project specialist to begin managing this three phased, three year program. Under his direction The Council has already completed a world wide survey of existing curriculum which highlights the uneven nature of secondary aquaculture education material. Completing this activity allows The Council to move expeditiously to phase one. The Council appointed a task force to serve as advisors on the project and has held two national meetings to receive input from leaders within the industry. This task force consists of individuals with aquaculture experience in government, education, agriculture and industry and specialists in agricultural education from around the country and will serve throughout the life of the project.

This preliminary work on infusing aquaculture into the agricultural education curriculum was funded through an $85,000 grant from the USDA through the Office of Higher Education. Funding was supplied by the Cooperative States Research Service, the Soil Conservation Service, the Extension Service and the Appalachian Regional Commission.

PHASE I/Designing and Developing Curriculum and Support Materials

In 1990, The Council will contract with technical aquaculture experts and curriculum writers to complete the first phase of the project--modifying existing material and writing new curriculum and laboratory exercises. This phase of the project is estimated at $239,000 and the Congress has already appropriated 1990 funds for this purpose. The curriculum and materials will be developed and written by teacher educators or curriculum specialists in agriculture, hired as contracted individuals for the project, and validated by other aquaculture technical specialists in the public and private sector. We would rely on the experiences of institutions representative of geographic areas of the country and different commercially viable species, for assistance in this activity. Generic curriculum would be modified to be specie and site specific.

PHASE II/Field-Testing Aquaculture Curriculum and Developing Audio Visual Support Materials

In phase two of the project (1991-92) The Council will provide funding to five sites to provide equipment for use in field testing the new material, train teachers and complete the development of support materials, including audio-visuals. This is the most extensive and expensive part of the project and is estimated at $3.7 million.

These five test areas will be representative of the major geographic areas of the U.S. and the commercial aquaculture species. The Council has received great interest in pilot participation from Mississippi, Florida, Idaho, Washington, Montana, Indiana, Iowa, South Carolina, North Carolina, Virginia, Maryland, Pennsylvania, Massachusetts and several other states. The Council's Aquaculture Task Force has made recommendations in the area of protocol for selecting test sites/states. The audio-visual materials will be developed after the curriculum and laboratory materials are completed in phase one. Phase two will also include making such modifications to the curriculum and laboratory exercises as necessary based on the results of the field testing supplied by the five test sites.

Teacher training for the pilot school instructors will begin the summer of 1991 and would include a minimum of 50 teachers/educators, 10 from each of five state or regional sites.

PHASE III/Implementation of Aquaculture Materials Through Infusion Within Secondary Vocational Agriculture Curriculum

Phase three plans include 1992 and 1993 summer workshop which would be the beginning of a nationwide program for training teachers throughout the country in the teaching of aquaculture to secondary, postsecondary and adult students in this country. This third phase of the project is estimated to cost $750,000. The Council believes we can utilize existing unplink/downlink satellite capabilities in a cooperative effort like those in the facilities found in Mississippi.

The Council will also conduct an evaluation of the effectiveness of this educational effort for attitudinal and cognitive achievement. At the conclusion of the test period each selected site should, on its own, continue this effort based on merit and continued geographic need and support. By this effort we will, in effect, have created five ongoing regional aquaculture training centers. We anticipate sustained funding from the state departments of education, local communities and the private sector to continue the support of this education effort.

In summary, Mr. Chairman, The Council requests a total of $4,450,000 over three years to implement this program. We believe it is a good and necessary program and would appreciated the committee's support. For Fiscal Year 1991 funding cycle we are requesting $3.7 million to train teachers, complete support materials and field test the new curriculum. Many of those funds will not be expended until 1992.

Again, thank you for the opportunity to appear before you today.

STATEMENT OF THE NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION

The Diagnostic Imaging and Therapy Systems Division of the National Electrical Manufacturers Association wishes to express opposition to the user fee proposal contained in the President's FY 1991 budget submission for the Food and Drug Administration. NEMA, with headquarters in Washington, D.C., represents more than 95% of U.S. manufacturers of nuclear imaging, radiation therapy, diagnostic ultrasound, x-ray imaging, and magnetic resonance imaging equipment. In addition, the division represents manufacturers of picture archiving and communications systems, as well as manufacturers of extracorporeal shockwave lithotripters.

As manufacturers of diagnostic imaging and therapy systems equipment, it is our firm belief that these user fees constitute nothing short of a tax on new technology. As such, the proposed user fees will only stifle the research and development efforts needed to maintain American competitiveness in today's health care market.

We at NEMA believe that competitiveness is at the heart of the user fee issue -- competitiveness not only for American manufacturers abroad, but also for small manufacturers at home. Careful consideration must be given to the impact of the user fee proposal on small businesses as the Congress begins its assessment of the user fee proposal. As you know, small manufacturers typically have limited capital and may experience difficulty in meeting normal day-to-day expenses. To require these companies to provide "up front" money for FDA review of premarket approval applications, supplements, 510(k)'s, and other services mandated by law, presents an extra hurdle that is certain to impede the ability of small manufacturers to compete.

Supporters of the user fee concept contend that user fees are a necessary evil, and are the only way for the Food and Drug Administration to garner the resources necessary to efficiently fulfill its important mission of protecting the public safety and health. We take exception to this view. While we do not dispute the contention that the Food and Drug Administration needs additional resources, we dispute the extent to which user fees would lead to increased efficiency in FDA operations. On the contrary, we believe that user fees would undermine the efficiency of the existing FDA product approval process. Since the user fee proposal, as currently structured, rests upon the costs incurred by the FDA as a result of the product approval process, the greater the resource expenditure associated with the product approval process, the greater the user fee collected by the agency. This results in a situation in which the agency has no particular incentive to control product approval costs, since these costs are recouped from industry. Clearly this is a situation which would lead to increased inefficiency in the FDA product approval process.

Indeed, a detailed analysis of the administration's FY 1991 user fee proposal underscores the extent to which user fee revenue will fail to promote efficiency in FDA operations. For example, proposed program increases for FY 1991 are projected by FDA officials to total approximately 53 million. This means that only one third of the proposed $157 million in user fee revenues will be applied towards program expansions. The balance (66.3%) of user fee receipts would be applied to offset existing program expenditures. Thus, the proposed user fee revenue would be used primarily to fund existing FDA activities, and would not in any way be used to promote increased efficiency in FDA operations.

This point is particularly salient with respect to the user fee revenue anticipated from medical device manufacturers. FDA estimates place user fee revenue from new device applications at 16 million. By contrast, actual program increases for new device review are estimated at only 2.5 million. This means that 85% of the user fee revenue collected from device manufacturers will be applied to areas other than improved device review.

Thus, it is readily apparent that device manufacturers will see only a small fraction of the revenues expended on FDA user fees translated into a more expeditious review of medical devices.

Further scrutiny of the President's FY 1991 budget request reveals the user fee proposal to be little more than an elaborate accounting mechanism whereby overall FDA appropriations would be reduced. Whereas FY 1990 FDA appropriations stood at 587.1 million, the President's FY 1991 budget calls for merely $528 dollars in FDA appropriations -- with the remainder of FDA revenues to stem from the user fee proposal. Take away the user fee revenue, and the true intent of the user fee proposal is readily apparent -- a clever attempt to disguise a sixty million dollar reduction in FDA appropriations.

Moreover, even if the user fee proposal were to be enacted, one must not overlook the additional costs entailed in collecting user fees from manufacturers. Collection costs and the expenditures associated with hiring the additional FTE's necessary for implementation will partially negate any revenue gains to be derived from the user fee proposal. This leaves the FDA with even less money to spend on improving program efficiency.

Finally, from a management perspective, it is uncertain as to how the user fee proposal would be implemented. FDA sources indicate that user fee revenues culd run as high as $1,000 for each 510(k) submission and as high as $100,000 for each PMA application for medical devices. The FY 1989 annual report issued by the FDA's Office of Device Evaluation indicates that only fifty-six original device PMA's and 6,136 original 510(k) submissions were reviewed by FDA officials in FY 1989. Assessing user fees on these types of submissions alone will not enable FDA to arrive at the 16 million in user fee revenue to be collected from manufacturers of medical devices. One then wonders how the other types of device submissions reviewed by the Office of Device Evaluation -- for example, PMA amendments and supplements, investigational device exemptions, and 510(k) supplements -- wil fare under the user fee proposal. Clarification of this issue is particularly salient given the fact that the vast majority of PMA's (97%) received by the FDA's Office of Device Evaluation in FY 1989 were supplementary in nature. Further discussion of how these types of submissions, which contribute greatly to ODE's overall workload, would fit into the user fee scenario is a necessary prerequisite to future debate on the user fee proposal.

Before I close, let me point out that in many ways, the very nature of medical technology is incompatible with the user fee concept. Oftentimes, the pace of technological innovation is so rapid as to require the submission of separate 510(k) applications for each incremental change in product design. Under the terms of the user fee proposal, a user charge would be assessed for each separate 510(k) application. The end result of such an approach is the imposition of a user fee following each technological improvement made over the life cycle of a product. The deleterious impact of this scheme of incremental taxation is readily apparent.

These are but a few of the issues which must be addressed as the subcommittee begins consideration of the user fee porposal. Careful consideration of these issues is warranted as the subcommittee proceeds in its deliberations. We at NEMA urge the members of this subcommittee to disallow the user fee proposal, and to look to other sources of revenue to find the financial resources which the Food and Drug Administration needs to carry its important work into the twenty-first century.

NATIONAL FOOD PROCESSORS ASSOCIATION

STATEMENT OF JOHN R. CADY

The National Food Processors Association (NFPA) is a trade association representing approximately 600 member food companies that manufacture a wide variety of processed food products. NFPA members include manufacturers of process-prepared vegetable, fruit, meat, poultry, and fish products as well as processors of specialty food items preserved through canning, freezing, dehydration, pickling, and other methods. NFPA members also include businesses that supply food companies with specialized equipment and other supplies.

NFPA is a scientifically and technically-based trade association. Only one indication of NFPA's commitment to science and technology are the three food science research laboratories it operates which are staffed by over 100 employees. NFPA laboratories conduct studies on food safety, nutritional content of food, and innovative food processing and packaging technologies designed to promote optimal safety and nutritional value of food. NFPA brings its technical expertise to its representation of member companies in matters of scientific, government and consumer affairs.

Summary of NFPA Request

NFPA appreciates the opportunity to support funding of the Food and Drug Administration (FDA) that we believe is fundamental to assuring the future strength and vitality of the agency's food programs. NFPA requests that the Subcommittee support full funding of the President's budget request for FDA and provide additional funds for four specific areas of research critical to FDA effectiveness:

- Risk communication -- add $10 million
- Biotechnology -- add $10 million
- New food packaging and processing technologies -- add $5 million
- Food labeling and health messages -- add $6 million.

Each of these areas is discussed below.

Importance of FDA Food Programs

The American food industry works diligently to produce the most safe and wholesome food available in the world, and to maintain consumer confidence in the food supply. The food industry also strives to communicate important food-related health and safety information to the public. We believe our record in these matters is strong, and one to be proud of.

However, FDA also plays a key role in promoting food quality and assuring consumer confidence in the food supply. FDA does so through the science-based policy choices it makes as it assesses the need for food and labeling regulation, evaluates and develops regulatory systems to address food issues, and communicates health information and FDA policies to the public. FDA must be strong, well staffed and well informed to carry-out these functions effectively.

FDA effectiveness has suffered during the period of deregulation of the 1980's. This period has been marked by waning public confidence in the agency which has produced potentially serious consequences for the food industry. As FDA food programs have weakened, states have sought to fortify food regulations with systems of their own. Even private organizations have become involved, launching quasi-regulatory food testing and labeling programs. The food industry knows first-hand that a strong FDA that enjoys public confidence is fundamental in promoting consistent regulatory standards that best promote public health uniformly throughout the nation. Such consistent standards enable the food industry to remain competitive at home and throughout the world.

Need for Enhanced FDA Research Capability

Therefore, it is of critical importance to the food industry that the strength of FDA be restored through appropriations that will enable the agency to carry-out its Congressional mandate and will renew consumer confidence in the agency and the food supply. NFPA asks that the Subcommittee on Agriculture, Rural Development, and Related Agencies fund fully the President's budget request for FDA, and provide additional funds in four specific areas of research that will improve FDA effectiveness.

Risk Communication

NFPA believes that improved risk communication is necessary to assure that the health messages FDA disseminates to the public are not only accurate, but understood. Too often, information concerning diet-related risks have created public misconceptions and inappropriate reactions that have seriously damaged sectors of the food industry. This problem is exemplified by the injury to apple growers and manufacturers of apple products that occurred last year because of public misunderstanding of the risk presented by Alar. To avoid such incidents in the future, research must be directed toward understanding better current public attitudes concerning health risks, creating a risk database and food crisis center, and identifying enhanced methods of risk communication.

NFPA requests that the Subcommittee increase by $10 million the funds devoted to FDA risk communication research. Such research is of central importance to FDA food programs and will help to maintain public confidence in the food supply by fostering improved public understanding of the true nature of food risks, and by informing FDA of consumers' food safety concerns so that it may better target its resources.

Biotechnology

Advances in biotechnology are stimulating the development of new foods and food ingredients. These include enzymes useful in food processing that are derived from genetically engineered bacteria, and food produced by genetically engineered plants. Sufficient funds must be appropriated to keep the agency abreast of these developments and prepare it to regulate the products of biotechnology in a manner that best promotes the health and safety of the consumer.

NFPA requests that $10 million in additional funds be provided to augment FDA research concerning biotechnology.

Food Packaging and Processing Technologies

Additional research is needed if FDA is to be adequately prepared to address the regulatory issues presented by such advanced technologies as degradable food packaging materials and aseptic food processing and packaging methods. Research should address scientific questions concerning package integrity, microbiological safety of packaging components and packaged food, and diffusion of packaging materials into food.

NFPA requests that $5 million be added to the FDA budget to strengthen the agency's research capability in the areas of food packaging and processing technologies.

Food Labeling and Health Messages

Congress and the public have demonstrated substantial interest in the development of a regulatory system that would increase the information on food labels concerning food safety and nutrition and would provide for health messages related to diet and health. Such a regulatory program must be founded upon a solid research base. Research funding is needed so that the Center for Food Safety and Applied Nutrition (CFSAN) can review fully current food labeling regulations, and develop new requirements and a system for increased labeling surveillance and enforcement.

NFPA requests that $6 million be added to the FDA budget to fund such a comprehensive review and evaluation of food labeling. Such research will enable FDA to satisfy the desire of Congress and the public for an improved labeling system. It will help to assure the system ultimately developed is appropriate and is one FDA can effectively administer.

To summarize, it is most important that the FDA regain the leadership and organizational strength that it has lost during the past eight years. The Congress, the public, and industry must be able to rely on a strong FDA to ensure the safety and quality of the food supply. NFPA believes that by providing not only the funds that the President has requested, but additional funds in specific areas of research that are critical to agency effectiveness, FDA will be better prepared to meet the regulatory challenges it continues to face as a result of advances in food technology, and consumer expectations. NFPA asks for your support for the specific requests outlined above. Please support the FDA and provide funds sufficient to enable the agency to carry out the mission Congress has mandated.

NATIONAL ORGANIZATION FOR RARE DISORDERS, INC.

STATEMENT OF ABBEY S. MEYERS, EXECUTIVE DIRECTOR

Mr. Chairman, members of the Subcommittee, we regret that you will not be holding public hearings this year, but we appreciate the opportunity to submit this written testimony so we can thank you sincerely for the generous increase you appropriated last year for FDA's **Orphan Product Grant Program**.

As you know, the FDA provides grant support for pivotal studies on orphan drugs, orphan medical devices, and orphan medical foods. The grants are awarded to academic scientists and small pharmaceutical companies for clinical testing of therapies that will arrest or treat rare "orphan diseases". There are more than 5,000 such diseases which collectively touch the lives of an estimated twenty million Americans. Most of these diseases are very serious, chronic and/or life-threatening.

Academic scientists studying treatments for rare diseases usually have no place else to turn for financial support of their clinical investigations. NIH tends to fund "basic" research, and large pharmaceutical companies tend to support clinical trials on drugs for prevalent, more lucrative diseases. The voluntary health sector and foundations that fund biomedical research tend to provide small "seed money" grants that are not extensive enough for FDA's approval purposes. This is why FDA's orphan drug grant program is so important; evidence of safety and efficacy can be gathered under these clinical research projects to be used for the FDA approval process or re-labeling of marketed drugs for rare indications.

After several years of small annual increases in this vitally important appropriation, this Subcommittee appropriated $9.751 million for the orphan product program last year (FY90), with no less than $7,575,000 to be spent on orphan product research grants. We are extremely grateful that you have recognized the merit of this unique program, and we thank you from the bottom of our hearts.

We are asking you this year to appropriate $14 million for this program which is the amount authorized by the Orphan Drug Act. Our request is based on the fact that there are 5,000 rare diseases which must share the $7,575,000 you appropriated last year, which amounts to $1,515 per disease. Obviously not every rare disease will require funding next year because sadly, no research at all is being pursued on many of these illnesses. But there is a desperate need to support clinical investigations on treatments that have some preliminary evidence of efficacy, and the competition for FDA's orphan drug grants is fierce. Last year, out of FY89 appropriations, FDA funded only 1/6 of grant applications to this program. Out of the 21 funded grants, we are delighted to tell you that new treatments are being investigated for autism, a fatal cancer in children (neuroblastoma), porphyria, ulcerative colitis, Wilson's disease, sickle cell anemia, lead poisoning and many other serious orphan diseases.

Conversely, the President's proposed FDA budget requests $63 million for FDA's AIDS program, representing a 275% increase from FY88 to FY91. AIDS is only one disease, but FDA has 300 full-time staff and substantial resources devoted solely to HIV drugs even though there are millions of desperate people dying of many other diseases. The Office of Orphan Product Development has 12 staff devoted to 5,000 rare diseases, and it has only $9.7 million this year to address the massive orphan drug development problem.

Thus, we ask you to increase the FTE staffing level for the FDA's Office for Orphan Product Development to 15. This figure is in line with the recommendations of the National Commission on orphan Diseases, which submitted its report to Congress last year.

Again, we thank you for your generosity last year, and for your ongoing interest and compassion for the rare disease patients who are the beneficiaries of this lifesaving program. We hope that your deliberations about the entire FDA will result in a vastly increased budget for the entire agency because it is a well known fact that FDA is overworked and understaffed at all levels. Orphan drugs, just like other drugs, must transverse the regular drug approval system through the various divisions of FDA. Unless those divisions are adequately staffed and funded, lifesaving orphan drugs will be delayed and lives will be needlessly lost. It is time to reassess the status of facilities, equipment, and staffing levels of the FDA, so you can determine the effects that budget and staff reductions throughout the past decade have had on the entire agency, and consequently on the health and welfare of the American public.

Thank you.

NATIONAL PEST CONTROL ASSOCIATION

STATEMENT OF A. JACK GRIMES

- SUMMARY -

NEED FOR INCREASED URBAN PEST CONTROL RESEARCH

USDA Agricultural Research Service (ARS)
USDA Cooperative State Research Service (CSRS)

Urban pest control protects the health and property of millions of Americans on a daily basis. Despite Congressional mandates to USDA in prior budgets, research in this area continues to be overlooked and underfunded. The need to develop alternative methods to control pests in urban environments, along with the problem of increasing pesticide resistance, dictates that funding for environmentally sound urban pest management research be increased. Reasons for this are:

- 77% of the U.S. population lives in urban areas.
- Pests that urban residents are exposed to can transmit or carry many life threatening disease organisms (food poisoning, lyme disease, rabies, etc.).
- Over 50% of homeowners try do-it-yourself methods with inadequate knowledge to do the job correctly. Increasing resistance by pests, such as cockroaches, to available pesticides results in heavy overuse trying to gain control. This overuse contaminates the environment and leads to potential harm for both home and agricultural use.
- Fleas and cockroaches cost the American public over $2 billion a year to control. Available control resources are becoming less effective (i.e. resistant strains) and larger quantities of pesticides are used trying to get control. The pests increase, the amount of pesticides increase and the costs grow.
- Rodent contamination and infestation costs the consumer over $1 billion annually. There is no federally-funded research laboratory devoted to research to control this pest.
- Resistance to currently available pesticides in insects and rodents is documented and increasing.
- In 1990 urban pest management research, the government has funded only 2.5 scientists ($400,000 net to location) for household pest work at the primery ARS laboratory for urban pest management (Gainesville, Fla.) and funded less than the equivalent of one full-time scientist (less than $100,000 net) to university researchers.
- There is a need to expand this research base to increase funding to USDA/ARS, (government facilities) and especially to USDA/CSRS (university competitive grants) in order to meet the increasing needs.
- It is recommended that a total increase of $630,000 be appropriated in FY 1991 to be targeted to USDA Insects Affecting Man and Animals Laboratory at Gainesville, Fla. and to USDA/CSRS for competitive research grants for research to control urban pests and the damage they inflict on humans, structures and their contents. The specific distribution for the increase in appropriation by facility (and need area) is specified in the attached budget proposal.

URBAN PEST CONTROL

Proposed Increase over 1990 Appropriations for FY 1991

Agency/Objective	Amount
• USDA/ARS	
- Prime facility for urban pest control research, Gainesville, FL	
For: Addition of one full-time scientist for research on cockroaches, fleas and fire ants. This is one third of USDA/ARS' statement of need for new research funds.	$200.00
Justification: Attachment A	
• USDA/CSRS	
- Competitive university research funding	
For: Stimulate new research and education on urban pest control methods.	$430,000
Justification: Attachment C	
Samples: Specific University research proposals: - C-1 Research proposal University of Georgia College of Agriculture - C-2 Research proposal Texas A&M University, Department of Entomology	
Total	$630,000

NATIONAL PEST CONTROL ASSOCIATION* URBAN PEST CONTROL RESEARCH PROPOSED INCREASE OVER 1990 APPROPRIATIONS FOR FY 1991 For U.S. Department of Agriculture (USDA) Agricultural Research Service (ARS) and in the USDA Cooperative State Research Service (CSRS)

The Problem and Its Cost - An Overview

- Urban pest control protects the health and property of millions of Americans on a daily basis. It is estimated that the 1990 census will show that 77% of the U.S. population live in urban areas, and this percentage is growing as people move into cities to take advantage of urban development and to be close to work and employment opportunities. The population affected by this urbanization approaches 200 million people.

- In the urban environment individuals are impacted daily by arthropod (insect and related animals) and vertebrate pest problems. These pests affect the health and well being of humans and their pets by carrying and transmitting disease organisms such as: salmonella, rocky mountain spotted fever, histoplasmosis, and heart worm. In addition, through stings and their mere presence, arthropods can cause severe life threatening conditions. Property damage from termites, ants and other wood destroying organisms exceeds 800 million dollars annually.

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*The National Pest Control Association is the membership association of structural, general household, industrial, and institutional pest control companies in the United States and over 40 other countries, with both affiliated associations in most states and in other nations.

- The threats to public health, food supplies and property from urban pests such as cockroaches, ticks and rodents are escalating. This is partially due to the increasing resistance of some pests to the pesticides available, but also because of urban development moving into surrounding rural and wooded areas. A prime example is the crisis presented by the spread of Lyme Disease, a tick-borne organism infecting humans.

- The U.S. population is also experiencing the spread of new urban pest infestations from other countries such as the recent introduction of the Asian cockroach in Florida and the Formosan termite into Florida and Tennessee.

- Economic reports provide data to show the U.S. population is spending billions of dollars annually to attempt to control urban pests. The structural pest control industry of approximately 16,000 companies employs 85,000 people and grosses over $3.2 billion annually in the U.S. to control urban pests.

- An estimated $1 billion/year is spent for control of termites and repair of termite damage to structures. In comparison, the annual costs to control pest damage by many agriculture pests is much less (soybeans $150 million, cotton $169 million, beef, dairy and poultry production $265 million).

- Even though the cost for urban pest control and damage is far greater, there are by comparison very little specifically targeted funds allocated by the USDA for research to improve control of urban pests and the damage they cause to human health and to structures. USDA research funds to date have concentrated on insect control in food production and storage.

- Decisions by the Environmental Protection Agency to withdraw some traditional pesticides from the urban pest control market has resulted in the use of less residual pesticides, but they have to be applied in more frequent intervals. In some use situations the result is more pesticide applications, and increased volume of pesticides being introduced into the urban environment.

- The EPA is the primary regulating agency in the USA for pesticide use and for pest control, yet the EPA makes the above decisions, not considering that alternative management methods have not been developed and proven for the prevention and control of the pests that contaminate our food supplies, carry disease organisms and destroy our structures in urban locations.

- While the Agency speaks of developing pest management strategies (IPM) there has been very little research funded to test IPM concepts in the urban environment. Several urban research centers have been organized at universities around the United States. These centers still depend, for the most part, on funding from the pest control industry and manufacturers of pesticides. The funding of pest management programs is lacking, even though we continue to speak of its importance in the urban environment.

- The need for research to develop environmentally sound IPM approaches that incorporate the relatively new applications of biotechnology; pheromones and growth regulators, is necessary -- and urgent! The proposed 1991 budget increases to address that need is attached.

- University funding has been insufficient to conduct needed research. University centers for pest management research have been organized and other university researchers are seeking funding to test pest management strategies in the urban environment. The concepts considered could revolutionize the present methods utilized by the pest control industry. Competitive grant funding must be made available for this research. On an annual basis, $500,000 should be set aside for this purpose.

ATTACHMENT "A"

ARS RESEARCH IN URBAN PEST MANAGEMENT

DR. R. A. BRAM
National Program Staff, Agricultural Research Service, USDA

I. CURRENT URBAN PEST MANAGEMENT RESEARCH ACTIVITIES

   A. Insects Affecting Man and Animals Research Laboratory, Imported Fire Ant & Household Insects Research Unit, Gainesville, Florida

      1. Primary ARS location for Urban Pest Management Research

         a. Net to location budget of $400,700

         b. Much of the research is conducted in cooperation with the University of Florida

      2. Main focus of research

         a. Fleas

            (1) Mode of action of insect growth regulators

            (2) Field population dynamics

            (3) Ecology of host-flea interactions

         b. Peridomestic cockroaches

            (1) Behavior, ecology, and population dynamics

            (2) Development of an "Insect Control System" toxic bait that is being patented

            (3) Invention of a filtered soffit vent that will provide PCO's access to difficult-to-reach populations in attic soffits and wall voids

(4) Aides to the identification of peridomestic cockroach species are under development

(5) Field evaluation of strategies for Asian cockroach control

c. Domestic cockroaches (principally the German cockroach)

(1) Behavior of German cockroaches in simulated kitchens

(2) Evaluation of the mechanisms of insecticide resistance

(3) Development of a field kit that will provide rapid, definitive determination of insecticide resistance profiles (Resources for this new initiative were provided in the FY 90 budget through a Congressional add-on.)

(4) Evaluation of new toxicants and repellents is part of the ongoing program

(5) Cockroach allergens in the urban environment (a cooperative research project with medical entomologists, immunologists, environmental engineers, medical anthropologists, and architects).

d. Imported fire ants and other pest ants are particularly important in the South East

(1) Population ecology

(2) Toxicant bait systems (4 products are registered)

(3) Biocontrol

(4) Regulatory treatments

(5) Polygeny (multiple queens) and its impact in the urban setting

(6) Research on domestic ants (anticipated with chemical industry support)

B. Other ARS locations

1. Livestock Insects Laboratory, Beltsville, Maryland

a. Initiated research this year on the management of tick vectors of Lyme disease

b. Cooperative associations with the Modeling and Bioengineering Research Unit of the Gainesville Laboratory and the Knipling-bushland, U.S. Livestock Insects Laboratory, Kerrville, Texas

2. Insect Chemical Ecology Laboratory, Beltsville, Maryland

a. Synthesizing new repellent compounds

b. Evaluated for efficacy and toxicology in cooperation with U.S. Army and the Gainesville Laboratory.

3. Knipling-Bushland U.S. Livestock Insects Laboratory, Kerrville, Texas

a. No urban pest research underway, but spin-offs of other activities do occur

b. The Kerrville laboratory discovered the effectiveness of methoprene as a novel agent for the control of fleas in the home

c. Many other ARS laboratories are conducting research on arthropods that could have additional spin-off benefits for the pest control industry

II. FUTURE OPPORTUNITIES FOR INCREASED ACTIVITY

A. Strengthen quantitative ecological investigations leading to computer modeling of population dynamics

  1. Domestic cockroach species

  2. Peridomestic cockroach species

  3. Fleas

B. Develop new cockroach control strategies that include components of integrated management

  1. Reduce total dependence on traditional pesticides

  2. Avoid rapid development of resistance

C. Develop the means to control pharoah ants, Argentine ants, and other pest ant species that adversely affect the urban environment

  1. Expertise on ants already exists because of long established imported fire ant research

  2. Other ant species are of particular importance to the home owner

III. BUDGETARY CONSIDERATIONS

A. Current funding (net to location)

  1. Cockroaches and fleas - $400,000

  2. Imported fire ants - $1,012,500

  3. Lyme disease - 200,000

B. Resources necessary to address future opportunities

  1. Three scientists at $200,000 per SY

2. If Congressional language directs new research initiatives, it should be accompanied by new resources

C. Limitations to ARS urban pest research

1. Research on termites and other wood-destroying pests is the responsibility of the Forest Service

2. Research on the control of rodents and birds is the responsibility of the Animal and Plant Health Inspection Service

3. Research through competitive grants is done through the auspices of the Cooperative State Research Service

IV. SUMMARY

A. Current ARS urban pest management research is conducted principally at Gainesville, Florida, but other ARS laboratories have made contributions through spin-offs of other research initiatives

B. Current research activities concentrate on fleas, peridomestic cockroaches, and the German cockroach

C. Future opportunities for increased activity would include quantitative ecological investigations leading to computer modeling of population dynamics; integrated management strategies for cockroach control; and control of ant species that adversely affect the urban environment

D. Such opportunities would require 3 new scientists funded at a gross level of $200,000 per SY

ATTACHMENT C

NATIONAL PEST CONTROL ASSOCIATION

Date: 2/13/90

To: Jack Grimes

Subject: Urban Pest Management Considerations

From: George W. Rambo, Ph.D., R.P.E.,
Director, Research, Education, and
Technical Department

The movement within the university centers for urban entomology research is toward the developing "discipline" of urban pest management. Major universities have recognized the need by establishing research and academic centers at VPI and Purdue and the establishment of a university chair (Texas A&M). Other colleges and universities have shown interest in this and the number of researchers in urban pest management is increasing.

The NPCA recognized this direction several years ago. We also recognized the need for funding of such important projects. In the last five years, the NPCA has contributed over $240,000 to research in urban pest problems. Some examples are studies on the biology of insects to better enhance application technology, and surveys of pest distributions (specifically the destructive formosan termite) to better control this pest. We have looked at the very basics of biology and the newest technology of the growth regulators and pheromones.

It is essential to support such research efforts for the increasing needs of both the urban and rural communities.

The NPCA supports the development of environmentally sound and economically feasible pest management programs. The strongest centers for this research are in the ARS centers and through the CSRS competitive grant programs.

University funding has been insufficient to conduct needed research. University centers for pest management research have been organized and other university researchers are seeking funding to test pest management strategies in the urban environment. The concepts considered could revolutionize the present methods utilized by the pest control industry. Competitive grant funding must be made available for this research. On an annual basis, $500,000 should be set aside for this purpose.

ATTACHMENT C 1

(UNIVERSITY SAMPLE PROPOSAL)

INTEGRATED PEST MANAGEMENT OF INSECTS IN THE URBAN ENVIRONMENT

Roger E. Gold and Phillip Hamman
Department of Entomology
Texas A&M University

TECHNICAL ABSTRACT

The proposed research will use a combination of biological and chemical research objectives to develop new technology that can be integrated with current knowledge into management approaches to significantly reduce pesticide use in the urban (home) environment. Objective 1 will evaluate the effectiveness

and feasibility of control by parasitic organisms and microorganisms. This will involve importation, rearing, release and evaluation of effectiveness of parasites. Promising microorganisms will be utilized in combination with effective baits to determine control efficiency. Objective 2 will concentrate on the potential for use of neurohormones and their constructed analogs for control of pests by interrupting vital physiological processes such as uric acid secretion. Objective 3 focuses on developing methods for detecting insecticide resistance levels, improving efficiency through use of certain synergists and mixtures, and understanding the site of reception and mode of action of principal insecticides. This information will be utilized to reduce the amount of actual insecticide being used while maintaining control effectiveness. Objective 4 will explore our ability to transfer developed research in the form of integrated pest management practices to the pest control industry and the urban public.

PROPOSED ANNUAL BUDGET NEEDS:

A. Personnel	
Senior Staff (0.20 FTE)	10,000
Research Associate	25,000
Technician, Programmer	15,000
Graduate Student (4)	40,000
Undergraduate Students (2)	5,000
Secretarial/Clerical (0.50)	7,000
Hourly Wages	8,000
Total Salary and Wages	$110,000
B. Fringe Benefits	$ 5,400
C. Equipment Items (Permanent)	$ 15,000
D. Travel	$ 10,000
E. Other Direct Costs	
Materials and Supplies	15,000
Publications	2,000
Computer Services	3,000
Subcontracts (PCO Services)	7,000
Educational Materials	10,000
Total	$37,000
TOTAL DIRECT COST (ANNUAL)	$177,400 ✓
TOTAL INDIRECT COST (Overhead)	**

**Negotiated with Texas A&M University

DESCRIPTION OF PROPOSED RESEARCH

RESEARCH OBJECTIVES

Texas has grown by over 2,411,000 people between 1970 and 1980. Now approximately 80% of the state's 15,989,000 population lives in the twenty-six (26) largest metropolitan areas.

No information has been compiled for Texas showing losses attributable to household and structural insects. However, a 1984 Georgia survey of these pests could be used to ascertain the problem as it exists in Texas. Total losses from termites, cockroaches and fleas, a combination of actual damage and cost of control are equal to $75,420,000. One should expect this figure to be much higher for Texas, considering the size of the state, larger population and greater diversity of insect fauna.

A 1980 survey conducted by Frankie et al (1981) indicates that over 62% of Texas households used pesticides via self application at least 10 times per year to combat indoor pest problems. Insecticide use by this target audience represents 57% of the total volume of insecticides used in the state. In a great many instances (83%), these applications represent non-judicious use of pesticides which materially contribute to problems associated with environmental pollution and health safety standards (Frankie and Levensen, 1978, Frankie et al, 1981b).

About 41% of the pest control practices in the urban areas are conducted by commercial firms. This 13,000 person industry performs approximately 5 million pest control jobs annually (Texas Structural Pest Control Board, 1988). No statewide data are available for annual sales of pest control services, but the Charles H. Kline Company reported $2.5 billion sales in the U.S. in 1985. In the case of household pests, pesticides usually are applied on a weekly, monthly or quarterly schedule, with little regard to need or available alternatives.

The methodology exists for implementation of integrated pest management (IPM) in urban homes (Eberling, 1978). Research has shown that sanitation practices along with pest exclusion methods are effective in reducing domiciliary cockroach species populations, leading to reduced pesticide applications and longer lasting pest control efforts. A greater use of available alternatives will not only lead to improved control but will also contribute to reduced human pesticide exposure.

The Urban Pest Management Program at Texas A&M University has as its long term goals the following: (1) to develop population assessment systems that can be effectively used to assess the extent of pest infestations, and the impact of control technologies; (2) to appraise the importance of household insects, both real and perceived, as they impact upon humans, their dwellings and properties (development of economic and aesthetic thresholds); (3) to evaluate various pest control strategies and technologies including: the potential for biological and biorational control; new pesticidial approaches; application techniques and equipment; sanitation, mechanical and physical control; (4) to measure and assess the impact of pesticide exposure to both urban pesticide applicators and the residents of treated structures. This goal will involve the collaboration of medical personnel from the College of Medicine as well as human volunteers; (5) to develop and deliver an Urban Pest Management program to the residents of Texas based on the research derived from 1-4. Delivery will be through technology transfer programs of the Cooperative Extension Service.

The specific objectives of this proposal relate directly to goals (2), (3) and (5) above and are divided into long and short-term research as follows:

Long Term Objectives: (Resources received from this proposal would be utilized to enhance our capability to compete nationally for grant resources to continue these objectives beyond the two year funding)

1. To investigate the potential of biological control agents, i.e. parasites, microorganisms, and nematodes for control of household pests, especially cockroaches and termites.

2. To test the antidiuretic action of presently defined cockroach neurohormones on biting flies, fleas, and other blood-feeding pests and to detect, isolate and identify new neurohormones, and analogs thereof, that might have promise for future control of urban pests.

Short Term Objectives: (Complete in two years)

3. To explore new chemical insecticide approaches including development of standard testing procedures for detecting resistance and the use of insecticide:synergist combinations and other techniques for maximizing efficiency while reducing levels of toxic materials used in the home environment.

4. To conduct a study to determine the ability to establish and transfer reduced pesticide use practices (Urban IPM) to the Pest Control Industry and the Urban public.

RESEARCH PERSONNEL

The research will be performed by an interdisciplinary team in the Laboratories for Urban Entomology and Public Health at Texas A&M University. The PI is director of the laboratories and is holder of a 1.2 million dollar special chair in Urban Entomology recently established at Texas A&M. Other investigators are Dr. Roger Meola, insect neurophysiologist who will do initial screening, identification and bioassay of neurohormone peptides affecting cockroach, houseflies and fleas, Dr. T. K. Hayes, Director of the Texas Agricultural Experiment Station Biotechnology Peptide Services and will direct isolation and characterization of the neuropeptides and the development of analogs, Dr. William Plapp, whose expertise is in toxicology, genetics and biochemistry of resistance to insects, will develop monitoring methods for resistance and methodology to increase efficiency of household insecticides with reduced dosages, Dr. Jim Woolley, Biological Control with specialization in biosystematics of parasitic hymenoptera and Dr. Phil Hamman, Co-PI and extension urban entomology specialist, who will conduct surveys and provide the interface with the public and the pest control industry in education and technology transfer aspects of the project.

METHODOLOGY

Objective 1. Investigate the potential of biological control agents, i.e. parasites, microorganisms, and nematodes for control of urban pests, especially cockroaches, fleas and termites (Gold, Woolley in association with Biological Control and Quarantine Facility (Rose))

There are a number of identified parasites of cockroach egg cases. Among the most effective are *Tetrastichus hagenowii* (Ratz), an endemic parasite of several cockroach species (Fleet et al. 1975) and *Comperia merceti* (Compere) a parasite of brownbanded cockroaches (Slater et al. 1980). These parasites, as well as others, will be brought into Texas through our Biological Control Quarantine Facility, increased and released in designed experiments to evaluate their effectiveness and acceptibility by homeowners. Microorganisms, especially endemic bacteria, and fungi known to infect cockroaches will be tested in combination with effective baits for potential control.

Objective 2. Test the antidiuretic action of presently defined cockroach neurohormones on biting flies, fleas, and other blood-feeding pests and to detect, isolate and identify new neurohormones, and potential analogs thereof, that might have promise for future control of urban pests (Meola, Hayes, Gold).

There are three major categories of known insect hormones: the ecdysteroids, the juvenile hormones and the neurohormones. Neurohormones are generally peptidic and they may have greater potential for insect control than the other two groups. Neurohormones are the master regulators in insects and affect a multiplicity of physiological processes related to reproduction and general physiological homeostasis. Blood-feeding insects use neurohormones as diuretic agents to stimulate the rapid elimination of water after feeding. Diuresis lightens the water load increasing the insects' ability to escape predators and avoid other hazards associated with reduced mobility. In contrast insects such as cockroaches that feed on dry food tend to produce antidiuretic hormones that conserve water by decreasing the rate of urination or increasing rectal reabsorption of water from fecal waste. Accordingly, we propose to investigate whether a series of purified cockroach neurohormones have antidiuretic effects that may be utilized to prevent water excretion in blood-feeding insects in the urban environment.

The diuretic action of purified cockroach peptides will be assayed on blood-feeding insects such as fleas and biting flies. Diuresis will be determined with a water transfer bioassay using the isolated excretory system (Malpighian tubules). Diuretic and antidiuretic effects will be measured radiologically by monitoring movement of 3H-H20 through the Malpighian tubules. The demonstration of neuropeptide structures that control water-balance in blood feeding insects is the first step in the development of non-peptide compounds with similar activities that can be used as residual insecticides for the control of these pest species. Further, additional neurohormones from cockroaches, mosquitoes, and biting flies will be detected, extracted, bioassayed, purified, identified and synthesized in quantities sufficient for study of their effectiveness, as well as constructed analogs. These biologicals and constructed biologically active analogs will be tested against urban pests utilizing similar bioassay techniques described above.

3. Explore new chemical insecticide approaches including development of standard testing procedures for detecting resistance and the use of insecticide:synergist combinations and other techniques for maximizing efficiency while reducing levels of toxic chemicals used in the home environment (Plapp and Gold).

Methodology developed by Capanbola and Plapp (1989) using surface treated vials will be modified to develop a residue exposure method of evaluating the effectiveness of individual and various combinations of insecticides:synergists for different species of urban pests. This same method will be utilized for detecting the emergence of resistance of the pests to commonly used pesticides. Finally, based on information gained from biological assays, measurements will be taken to establish the specific biochemical and genetic basis, mode of action and specific mechanisms involved in the development of the resistance. Knowing these factors, potential strategies can be developed on how best to effectively manage current and new insecticides in the urban environment to increase efficiency with smaller amounts (synergism) or to prevent or slow development of resistance in the pest population.

4. Determine the ability to establish and transfer reduce pesticidue use practices (Urban IPM) to the Pest Control Industry and the Urban public (Hamman, Gold, McIlveen).

A survey will be conducted in four highly populated areas to assess the acceptance of urban pest management and the relative market place it may have for commercial pest control operators. Concurrently, a study will be conducted to evaluate three types of pest control services - (1) traditional, (2) using IPM techniques and (3) using the least toxic or no pesticides. These levels of service would be compared based on customer acceptance, efficiency in pest suppression/removal and profitability. Two or more pest control firms would be contracted, trained and supervised in this effort. Homeowner participants would be subjected to initial, periodic and exit interviews in order to assess comparative effectiveness and customer acceptance.

Data gathered from the survey and assessment of levels of commercial pest control practices, current research information and new research technology developed out of objectives 1-3, will be used to develop an overall, comprehensive training program for the Texas pest control industry. In addition to the production of a manual, other printed materials will be developed to be used as operational guidelines.

TECHNOLOGY TRANSFER

The objectives outlined in this overall proposed study will provide the basis for a more complete understanding of structural/household pests and the problems they incur in an urban setting. The developed technology will be transferred primarily via the Texas Agricultural Extension Service system of specialists and county Extension agents-pest management. Local media outlets - television, radio and newspapers - will be utilized to bring information to the general public as well as especially designed series of pamphlets and tracts illustrating urban pest management. The commercial pest control industry will receive training through the use of specialized local conferences and workshops in addition to specifically designed operational manuals. A series of television tapes will be developed to assist in this training effort, but which can be utilized in company level training programs as well.

INSTITUTIONAL COMMITMENT AND SOURCES OF ADDITIONAL SUPPORT

Texas A&M has recently made a major commitment to the Urban Entomology area through the matching of $600,000 provided by the Texas Pest Control Industry to create a 1.2 million dollar endowed chair to which the principal investigator was recently recruited from the University of Nebraska. In addition, the Texas Agricultural Experiment Station has provided $200,000 in startup funds for equipment and over $200,000 for rennovation of existing laboratory space for the support of the Urban Entomology research and education program. This recent commitment builds on an existing nucleous program involving a number of faculty with different specializations whose research relates directly or indirectly to the Urban Entomology program. We anticipate additional support from the Pest Control Industry, the commercial chemical industry, private foundations, National Institute of Health and the National Science Foundation. The resources being requested through this program will enable us to greatly strengthen our graduate research and undergraduate professional program in Urban Entomology and place us in a highly competitive research position nationally. The Pest Control Industry of Texas desperately needs highly trained individuals with new concepts of urban pest management to help upgrade and meet the rapidly expanding needs of this fast growing industry. We feel strongly that this research and educational project, and more importantly the resources that it will leverage in the future, will provide technology which can significantly reduce the current, almost unilateral, dependence on hard insecticides for control of pests in the highly populated metropolitan and urban environs of Texas and the U.S.

IMPACT ON INFRASTRUCTURE OF SCIENCE AND ENGINEERING

The research proposed has broad implications for Texas inhabitants and their environment. Pesticide use will be reduced substantially in the urban environment with the acompanying reduction in human exposure. The environment will be enhanced through better protection of sensitive or endangered species by the reduction of soil, water and air pollution associated with current heavy use of pesticides in the urban environment.

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ATTACHMENT C 2

(UNIVERSITY SAMPLE PROPOSAL)

POSITION REQUEST
DIVISION OF ENTOMOLOGY
COLLEGE OF AGRICULTURE
THE UNIVERSITY OF GEORGIA

Nature of Position - Entomologist to develop and conduct a research program on insect pests affecting the home, work place, industry and institutions.

Need and Rationale - Most people are unwilling to live, work or eat in dwellings contaminated by pestiferous insects or insects capable of transmitting human diseases and allergies. Additionally, structural pests such as termites and various wood borers are significant economic pests in Georgia. It is documented that cockroaches, termites, fleas, various beetles, ants and other insect pests infesting dwellings cost Georgians in excess of $100 million annually in losses and control costs. It is not possible to place an economic value on nuisance, social implications and potential health problems associated with some of these insects.

Currently, control of these pests is achieved primarily by the use of synthetic chemical insecticides which are used in nine (9) out of every ten (10) households and virtually all business establishments, hospitals and institutions. The intensity of pesticide use, amount applied per unit area in the urban sector is greater than in most agricultural situations. It is estimated that Professional Pest Control operators apply over 23 million pounds of pesticides (active ingredients) in and around the home. Recent estimates indicate that control of pests in and around the home account for 30-35% of all pesticides used.

Intensity of use, coupled with the use occurring in areas of population intensity signal the very real potential for a variety of problems and concerns - both real and perceived.

Target Audience - The target audience is man - in his house and other structures whether in single units or gathered together in large numbers to form towns, cities or metropolitan areas. The target audience is large and growing. It includes not only people in urban and rural areas but the professionals in industry and pest control services that augment management practices. There are approximately 650 such company offices in Georgia, 4,000 registered employees and 1,000 license holders. These companies reported $159,417,000 in annual revenue production in 1987.

The increasing need for science, technology and education for the prevention and control of insect pests affecting the home environment, and health of man is as certain as the continued population growth and urbanization of Georgia.

Proposed Research Thrust - To improve the quality of life, protect the quality of the home and work place through the development of safe, effective, environmentally and economically viable solutions to insect pest problems.

FACULTY CURRENTLY INVOLVED IN "URBAN" ENTOMOLOGY

DIVISION OF ENTOMOLOGY

THE UNIVERSITY OF GEORGIA, ATHENS

1. Dr. Kristine Braman, Research Entomologist, Griffin. Research focus IPM program for turf and wood ornamentals. Employed March 1, 1989.

2. Dr. Beverly S. Brewer, Extension Entomologist, Athens. Homeowner turf and ornamentals, commercial landscape industries, 4-H programs. Dr. Brewer was employed February 1, 1989.

3. Dr. Burton R. Evans, Extension Entomologist, Athens. Approximately 20% of his time devoted to educational programs on medically important arthropods; ticks, mosquitoes, etc.

4. Dr. William G. Hudson, Extension Entomologist, Tifton. Educational and service programs directed to commercial turf and ornamentals. Employed June 1, 1988.

5. Dr. Maxcy P. Nolan, Jr., Extension Entomologist, Athens. Approximately 50% of his time is devoted to educational programs and assistance with household and structural pests.

6. Dr. Ronald G. Oetting, Research/Extension Entomologist, Griffin. Research and Extension programs focus on floriculture and greenhouse plants.

Researchable Objectives -

(1) Pest Biology

(2) Population Assessment

(3) Population Regulation

(4) Specificity of Treatment Technology

(5) Management Tactics

(6) Pesticide Resistance

(7) Environmental Hazard

ESTIMATED ANNUAL BUDGET REQUIREMENTS

Personal Services (Salary and Benefits)	
1 Ph.D. Entomologist	$56,700
1 Technician	25,200
Student Assistance	10,000
Graduate Student Support	12,000
Support	
Laboratory Set-up	35,000
Supplies	10,000
Travel	4,000
Total	$152,900 ✓

NATIONAL PORK PRODUCERS COUNCIL

STATEMENT OF MIKE WEHLER, PRESIDENT

Mr. Chairman and Members of the Committee:

Thank you for this opportunity to submit testimony on the Fiscal Year 1991 appropriations for the U.S. Department of Agriculture. As president of the National Pork Producers Council (NPPC), I commend you for your strong support of the pork industry.

NPPC represents 100,000 pork producers and their families in 45 states that are affiliated with the national organization. We are the largest commodity dues-paying organization in the United States and accounts for more than 90 percent of the nation's commercial pork production.

U.S. pork producers believe that the future of our industry is in our own hands. However, we understand that we will need the cooperation of the federal government to undertake certain research programs and coordinate national efforts such as the control and eradication of pseudorabies.

We appreciate the agricultural appropriations allocated in previous years. The funds have provided for control and eradication programs that helped agriculture to combat diseases and pests in animals and plants. Federal appropriations also fostered vital research. NPPC recognizes the need for further scientific studies to advance our finished product -- pork -- along with the ongoing swine production research. Many of these efforts form a solid foundation that the pork industry needs to launch into the challenges of the 1990s. However, we also realize the Committee faces budget constraints that can make it difficult to determine funding priorities. It is in this light that we make our comments and hope they will be helpful. NPPC is confident that we can provide you with a plan of disease eradication and research activities that address the most urgent issues facing our industry. Based on these priorities, we can continue to supply an important protein source at a reasonable price to the consumer.

Animal and Plant Health Inspection Service (APHIS)

We strongly endorse the mission of the Animal and Plant Health Inspection Service to enhance our nation's economy and public health through the development and implementation of animal health and care programs. APHIS has made substantial contributions to our industry, including their administration of the pseudorabies (PRV) eradication control program. We would like to especially express our gratitude to this committee for its favorable response to our requests for PRV funding in previous years.

There is considerable demand building by the swine producers in the country, especially in the large hog producing states, to eliminate PRV. As the members of this committee know, the shorter the time it takes to eradicate an animal disease, the less costly it becomes. Moreover, the length of time to eradicate a disease is often related to the degree of producer desire to accomplish it. At its 1990 annual meeting, NPPC reaffirmed its strong commitment to the eradication program.

When we developed the initial 10-year budget in 1987, we originally planned to seek $6.8 million for PRV in 1991. However, our experience with the 1990 allocation proved that APHIS headquarter costs and state interest in the program exceeded expectations. Thus, we are forced to increase our budget request for PRV to $12.7 million.

Unfortunately in 1991, USDA has requested less funds for PRV eradication than what Congress made available to the program in 1990. USDA's low request sends the signal to states that PRV eradication is not a high enough priority. It is our understanding that state and producer contributions at this time are more than the USDA appropriation.

Despite the current federal and state funding, there are large numbers of producers with infected herds that are not being served by the program. While in other states, surveillance has not been carried out to the point of even locating all infected herds. In the latter case, swine movements from these undetected infected herds can spread the disease within their state and across the country, which increases the cost of the program.

We understand that APHIS supports this much needed program and have commended us in our efforts in developing the PRV eradication plan. We suggest that the committee inquire within USDA to learn what funds were requested by Veterinary Services, APHIS and USDA before the final decision was made to request less funds than was available in 1990 for PRV eradication.

Less money for PRV in the 1991 budget is not the only weight pulling down the progress of this eradication program. Even though the 1990 budget provided $600,000 more in federal funds than the 1989 budget, less total money was allocated to the states due to increased headquarter costs. It is our understanding that this is due to the USDA/APHIS budget process.

NPPC strongly believes that the APHIS budget process needs a thorough review. We understand that other commodity organizations have expressed this same view. The APHIS budget process may be satisfactory for accounting purposes, but it is totally impractical when dealing with the control and eradication of animal diseases. At a hearing held by the Senate Agriculture Subcommittee on Nutrition and Investigations in January, a review of the APHIS budget process was proposed. We hope this committee will pursue a similar course of action.

As we mentioned in last year's testimony, NPPC is also concerned about the lack of funding for swine brucellosis. We understand that current reports show only 59 herds of swine have this disease. Yet, a shortage of federal funds lets these few herds stand in the way of total eradication of swine brucellosis in the United States. Present funding maintains the disease without stopping it. Therefore, APHIS program costs and producer costs from swine brucellosis go on indefinitely. NPPC believes that swine brucellosis can be eradicated through a three-year program. The overall brucellosis program has provided little funding for swine brucellosis control efforts. Therefore, we seek line item funding of $3.3 million in FY91 to begin moving the swine brucellosis program in 1992. With significant commitment, we believe the disease will be wiped from the country in 1994.

APHIS also has many other vital programs that affect the pork industry. Therefore, we support the Administration's requests' of $3.417 million for the Swine Health Protection Program, which provides much needed surveillance of threatening diseases such as hog cholera from entering this country. We also encourage

Congress to meet USDA's request of $6.5 million for the APHIS Biotechnology Program because of the need to evaluate new biotechnology products. NPPC also supports the Administration's request of $9.2 million for the Animal Disease Detection effort. This key program area prepares the entire United States for disease emergencies and includes other programs with long-term benefits for animal agriculture.

Agricultural Research Service (ARS)

Pork producers value ARS animal research, and believe consumers and producers benefit from it. Therefore, NPPC supports ARS's request for increased funding to modernize the facilities at the Agricultural Research Center at Beltsville, Maryland. Swine producers from around the world have heard of the Center's accomplishments. Yet, the facilities are a national embarrassment, especially when viewed by foreign guests. Time and tight budgets have taken their toll on the Center's facilities, which are now in a deplorable condition. The swine research facilities are approximately 50 years old, and progressive swine research is ham strung by such deteriorated facilities.

We also want to emphasize our support of the continuation and expansion of research that lowers costs and enhances swine productivity through improved genetics and breeding. Therefore, we are disappointed that USDA did not request an increase at the Meat Animal Research Center (MARC) in Clay Center, Nebraska. USDA conducts much of its pork production research at MARC, so this facility is key to our industry. MARC research will improve our diagnostic capabilities to test and identify genetically controlled cellular immune components. We are also interested in MARC's studies on genetic mapping that affect litter size and breeds of swine that are resistant to disease and parasites. Therefore, we ask that Congress provide $1.2 million to MARC for swine facilities improvements that are needed for MARC's work.

NPPC is also particularly interested in ongoing studies at National Animal Disease Center in Ames, Iowa, on respiratory diseases, trichinosis, enteric diseases and atrophic rhinitis, which all cause major losses to the pork industry.

ARS also needs funding to conduct food safety studies that will address the public's questions on the wholesomeness and safety of our food supply. NPPC has seen the need to initiate our own food safety efforts, such as the checkoff-funded Quality Assurance Program to help eliminate drug residues. However, more government scientific data is critical to consumers and producers alike. Therefore, we fully support the increase of $10 million proposed by USDA for food safety research.

Cooperative State Research Service (CSRS)

CSRS and other agricultural entities can join to form an ideal partnership to answer many questions facing agriculture. The National Initiative for Research and Environment proposes to take advantage of this system to answer many of agriculture's most pressing questions. NPPC believes that this effort can serve as an excellent guide to meet many of our industry's needs for research. The program could provide competitive research grants that would answer critical questions on food safety, water quality, product development and more. Additional research funding is critical to provide a scientific basis to guide agriculture through this maze of questions and allow the United

States to take advantage of international marketing opportunities.

Therefore, we endorse the Coalition for Advancement of Research on Agriculture, Food and Environment's request for $150 million for the initiative in FY91, of which $30 million is allocated to animal systems. We also ask that the Initiative's strategy of using six program areas be kept intact. NPPC approves of organizing the Initiative into the areas of natural resources and environment; nutrition, food quality and health; new products, processes and research to add value to raw products; markets, trade and policy; plant systems and animal systems. We ask that new funding be allocated for this research effort. It should not come at the expense of Section 1414 and Section 1433 programs that have proven so valuable to agriculture.

NPPC recommends that Congress provide $5.731 million for Section 1433 research, as recommended by the National Association of State Universities and Land-Grant Colleges (NASULGC).

Food Safety and Inspection Service (FSIS)

NPPC has worked closely with FSIS and believes this cooperation is critical to the continued ability of producers to market their swine. We rely heavily upon the agency to set standards that will increase consumer confidence in our product. NPPC's cooperation with FSIS has accomplished several achievements, such as reducing sulfamethazine residue levels in hog carcasses to less than 1 percent in 1989. NPPC will continue to be involved with FSIS as they develop the Hazard Analysis Critical Control Point (HACCP) program for meat inspection. We ask that the committee notes that NPPC is opposed to user fees on food inspection.

Extension Service (ES)

The Extension Service has a long and impressive record of assisting the transfer of new technology from the research arena to the farm level. Agriculture is on the brink of many new endeavors in critical areas, such as groundwater quality and food safety where the Extension Service can replay its vital role.

NPPC encourages funding that will allow the Extension Service to help transfer information to consumers as well as producers. We see a clear need for an accelerated program of technical, educational and financial assistance at the local level to promote best management practices for groundwater quality. The Extension Service could deliver a broad based education and outreach program on water quality to producers.

Foreign Agriculture Service (FAS)

We appreciate the efforts of the FAS, particularly in areas such as the Targeted Export Assistance (TEA) program. TEA funding helped the United States increase our pork exports by 47 percent in 1989 above 1988 levels. Total U.S. pork exports were valued at $460.2 million in 1989.

NPPC would like to see FAS also utilize its Export Enhancement Program (EEP) funds to respond to unfair trade practices in pork. Section 1128 of the 1985 Farm Bill stated that the Secretary of

Agriculture "shall seek to expend annually at least 15 percentum of the total funds available" of the EEP to encourage sales of poultry, beef and pork. Yet, the program has not been used for pork or beef. Recent increases in European pork subsidies certainly justify the U.S. pork industry's request for the Secretary of Agriculture to use EEP funding to counteract these trade-distorting subsidies.

Food and Drug Administration (FDA)

FDA's Center for Veterinary Medicine plays a key role in many issues that are of concern to producers and consumers. Biotechnology advancements, such as porcine somatotropin, will even further FDA's involvement in food safety and other issues. Public confidence partially rests upon FDA's knowledge and statements. Therefore, FDA must have appropriate funding and staff to develop and present a scientific analysis of new products and practices.

NPPC frequently interacts with the Center for Veterinary Medicine, and our experiences show that they need more funding and staff than they have been allotted in the past. Their ability to respond, even on issues of great importance, has been restricted by limited funding. Yet, the role of the Center is growing in importance as we face questions on drug residues and new technology. The nation's pork producers will continue to rely on the Center for vital information on field inspections, good management practices and more. To fulfill these basic responsibilities, we believe that the FDA budget should include at least a $1 million increase for the Center for Veterinary Medicine.

We do not endorse user fees as a partial means of financing FDA activities. FDA funding is needed so that government agencies can enforce regulations along with the efforts of the free enterprise system to police itself. Such action reinforces consumer confidence.

Conclusion

NPPC thanks the Committee for its support of the many programs mentioned within this testimony. With your assistance, pork producers can cooperate with the government to build upon U.S. capabilities in food safety, international competitiveness and many other vital areas.

NATIONAL POTATO COUNCIL

STATEMENT OF BOB WALTHER, VICE PRESIDENT

Good morning Mr. Chairman and members of the Subcommittee. My name is Bob Walther. I am a potato farmer from Michigan and current Vice President for Government Relations for the National Potato Council (NPC). Last year, Past President Michael Cranney from Idaho testified before this Subcommittee regarding funding for the National Potato Research Proposal. On behalf of the Council, we thank you for your assistance in obtaining funding for part of the Proposal in Fiscal Years 1988, 1989 and 1990 and we look forward to working with you to expand the funding in Fiscal Year 1991.

The National Potato Council (NPC) is a national trade association representing approximately 12,000 potato growers in thirty-eight (38) states. Our growers produce both seed potatoes and potatoes for consumption in a variety of forms. Annual production during the decade 1977 to 1986 averaged 352,185,000 hundredweight with a value of $1,632,306,000. Total value is substantially increased through processing. The potato crop clearly has a positive impact on the U.S. economy.

The potato is the most popular of all vegetables grown in the United States. Annual per capita consumption is 123.4 pounds, up from 107 pounds in 1962, and is increasing due to the advent of new products and heightened public awareness of the potato's excellent nutritional value. Per capita consumption of processed potatoes increased dramatically from 58.5 pounds to 76.4 pounds. Potatoes are considered a stable consumer commodity and an integral, delicious component of the American diet.

The potato crop has been traditionally controlled by supply and demand in a free market. Government support programs such as price-guarantees and acreage set asides have not been necessary. However, like any other major commodity, potato growers recognize, in order to remain a viable and competitive industry, we must constantly strive to improve production efficiency and market quality. Through carefully planned and executed research, we believe we can continue to offer an excellent product and remain a viable U.S. agricultural industry.

As you will recall, the National Potato Research Proposal was the culmination of an intensive effort begun in 1984 between the NPC and the U.S. Department of Agriculture's (USDA) Agricultural Research Service (ARS) to identify national research issues of concern to the potato industry. During the Fiscal Year 1988 budget process, based on these identifiable research needs, the National Potato Research Proposal received initial funding for the top three of nine priority research projects as follows: ring rot disease ($500,000); early dying disease ($350,000); and marketing ($350,000).

During the Fiscal Year 1989 appropriations cycle, the NPC presented to you and your Subcommittee a request to build on the funding base that had been established in Fiscal Year 1988. Due in large part to your leadership, Mr. Chairman, and the support and interest of all the members of the Subcommittee, Congress approved increased research funding for marketing at a level of $250,000 and provided initial research funding for aphids and potato beetles at the level of $200,000 each. The industry is well aware of your assistance in obtaining this funding, and we deeply appreciate the efforts of the Subcommittee, particularly in light of the budgetary difficulties you have had to face.

In the Fiscal Year 1990 appropriations cycle the ARS received additional funding for the National Potato Council to research priorities for aphids ($200,000) and potato beetle research ($300,000).

For 1991 the NPC urges the appropriation of funds for marketing ($1,400,000) for aphids ($400,000) for potato beetle research ($1,500,000) as well as new start up funding for the remaining national proposal projects: weeds - $1,000,000; varietal development - $800,000; soils - $610,000; and agricultural engineering - $237,000.

It is important to note that representatives of the NPC have held several extensive meetings with ARS officials, the most recent in December of 1989, to discuss the distribution of Fiscal Year 1990 funding. The NPC is particularly pleased with the tremendous efforts put forth by ARS to ensure that the research is conducted in the most thorough and expeditious manner. The NPC looks forward to continuing its close partnership with ARS to maximize the use of these important funds.

We would like to mention once again the differentiation between regional research priorities and those priorities designed to help the potato industry on a national level. Variations in regional areas exist and are being addressed on the local level. While there is ARS funding directed to these problems that should be maintained, we are here to discuss, separately, the national nine-part proposal. Further, it should be noted the NPC has stressed the coordination of regional and national projects in order to eliminate duplication of effort or scarce resources.

The nine projects are deemed to be the most essential national research projects to improve potato production throughout the nation. For example, research would be conducted on diseases which affect the industry's ability to promote exports and reduce market losses, thereby ultimately benefiting the domestic consumer. Further, the National Potato Council believes these research proposals will enhance the overall marketable production of potatoes, therefore benefiting the grower and consumer without reliance upon costly federal production subsidies.

The NPC has become deeply involved in environmental issues, including concerns over groundwater and chemical safety. We feel that our growers make every attempt to apply such chemicals safely and well within Environmental Protection Agency requirements. However, we anticipate further restrictions on the use of chemicals and even the loss of some existing products. For example, the Colorado Potato Beetle has become an increasingly troublesome pest in western production areas and is spreading rapidly. Research is therefore even more critical given the rapid spread of this pest and the concerns over chemical use. It may even be possible to overcome our dependence on chemicals through plant breeding and use to genetic engineering approaches.

Each of the nine proposals was outlined in detail, including recommendations concerning the objectives of the research and suggested funding levels, and was submitted to your Subcommittee during the Fiscal Year 1988 cycle. The programs and priorities were identical for Fiscal Year 1989 and 1990 and will remain the same for Fiscal Year 1991.

The NPC will continue to work closely with USDA to oversee this research and will report periodically to the Congress on the progress of the research. We sincerely thank your Subcommittee for its generous support of this vitally important research. I would be happy to answer any questions you might have.

NATIONAL RURAL ELECTRIC COOPERATIVE ASSOCIATION

STATEMENT OF BOB BERGLAND, EXECUTIVE VICE PRESIDENT

Mr. Chairman and distinguished Members of the Committee:

My name is Bob Bergland. I am executive vice president of the National Rural Electric Cooperative Association (NRECA), the Washington, DC-based service organization of the nation's 1,000 nonprofit, consumer-owned rural electric systems, which provide electric service to more than 25 million rural Americans in 46 states.

Before I discuss NRECA's recommendations for REA lending levels, I would like to provide you and the members of the Committee with a brief report on the "State of the Program."

* Rural electric systems continue to provide high quality and reliable electric service to more than 10 percent of the population of the nation. Rural electric lines span some 75 percent of the nation's land mass.

* Recent data show that rural electric systems continue to operate under the same disadvantages that have traditionally existed in the program. Rural electric systems now serve an average of 5.2 consumers per mile of line compared with 32 customers per mile of line for investor-owned electric systems, and 41 per mile for municipal systems.

* Revenue per mile of line for a rural electric co-op amounts to $5,752 annually, compared to the $54,402 collected by investor-owned utilities and $59,134 earned annually by municipal systems. Conversely, co-ops have invested $1,634 in distribution plant for each consumer compared to $1,205 per customer for investor-owned utilities and $1,183 per customer for municipal systems.

* Today, more than 79 percent of all rural electric systems have higher rates than their neighboring utilities. This disparity can be traced to several factors:

  -- The inherent disadvantages of serving sparsely populated areas;

  -- The fact that rural electrics serve relatively few commercial and industrial loads compared to other utilities. During the past year, only about one-third of rural electric sales went to commercial and industrial consumers, compared to two-thirds in the case of municipal and investor-owned utilities. The relative absence of commercial load on co-op lines decreases load factor and increases costs to all rural electric consumers, and

  -- The fact that nearly 70 percent of the generation capacity of rural electric systems has been placed into operation during the past ten years--a period of inflated construction costs and high interest rates.

* Rural electric systems serve areas that have been hard hit by an ailing rural economy. This has drastically reduced load growth for many rural electric systems. In fact, today 144 of the nation's 930 rural electric distribution systems are losing consumers. This is an improvement over last year, and we hope for future improvements. However, this factor, combined with the

high cost of constructing new generation plant, has resulted in defaults by six generation and transmission (G&T) cooperatives. Again, I can report that workout plans and/or mergers are under way to get these systems back on track.

I mentioned that we hope for improvements in the rural economy. This is reflected in the number of loan applications from rural electric distribution systems.

At this time last year, there was a backlog of loan applications of approximately $400 million. That figure has grown today to more than $600 million.

Congress has, in the past several years, set both a floor and a ceiling for rural electric insured loans. If the Administrator were to have made loans to the ceiling in recent years, the backlog--essentially a year's worth of loans--would not exist.

Also, if the Administrator were to use unobligated insured loan funds carried over from prior years (approximately $251 million), the backlog could be substantially reduced.

We respectfully ask Congress to require the Administrator to utilize those unobligated funds to meet loan demand in the next fiscal year.

I would also call to the Committee's attention that pending amendments to the Clean Air Act may well require electric utilities to install new equipment and develop new technology to deal with the substance of those amendments.

Rural electric cooperatives generate approximately 8 percent of the coal-fired electric energy produced in the nation; however, they own 20 percent of the nation's flue-gas desulfurization units, or scrubbers. Approximately 44 percent of our generation is equipped with scrubbers. The reason for this is that a much higher percentage of rural electric generation was built after enactment of the Clean Air Act of 1970.

Nonetheless, some rural electric generation and transmission cooperatives will have to buy new equipment and employ new techology to comply with whatever amendments the Congress approves. While demand for loan guarantees has tapered off in recent years, I anticipate that the need for new financing will increase markedly. Again, we respectfully bring this to the attention of the Committee as you consider setting loan guarantee levels for Fiscal Year 1991 and beyond.

I would also report to the Committee that despite six separate and very clearly stated initiatives by the Congress, rural electric G&Ts have some $5 billion in Federal Financing Bank (FFB) loans carrying interest rates in excess of 10 percent. Had these systems been able to take advantage of recent declines in interest rates, a savings of some $50 million or more per year could have been passed on to rural electric consumers.

We continue to be at a loss in understanding why the FFB has permitted foreign governments to prepay some $9 billion in FFB loans and refinance at lower interest rates while not permitting rural electric systems to do the same.

One final comment before I get into the specific recommendations for loan levels, and I quote directly from a resolution passed by our membership in February: "We commend the Congress for treating the Rural Electrification Administration (REA) Revolving Fund in a manner similar to other U. S. Department of Agriculture revolving funds by providing appropriations to offset losses." I would add my personal appreciation to you, Mr. Chairman, and to the Committee for your actions in this respect.

Mr. Chairman, what follows are the recommendations of the Association, based on our annual Loan Fund Survey and, again, on a resolution of the membership, for rural electric loan levels and related matters for FY 1991.

We recommend:

- the continuation of REA's current supplemental ratios and criteria, and

- the continuation of current general funds policy which prohibits REA from denying loan approvals and advances based on a system's general funds level.

- With regard to the insured loan levels, in order to reduce the loan application backlog and meet rising demand for loan funds, we recommend that the floor for insured loans from the REA Revolving Fund be raised to $822.05 million and that the Administrator of the REA be instructed to use $251 million in unobligated funds carried over from prior years.

Again, I would quote from the resolution of the membership: "We urge Congress to authorize adequate levels of insured financing to meet the increased needs of rural electric systems as reflected by the growing loan application backlog and as indicated by the National Rural Electric Cooperative Association (NRECA) loan fund survey. In the past 10 years, insured funds have declined substantially despite continued inflation. However, insured levels must now be increased to meet the higher demands."

With respect to loan guarantees, we recommend that the 100 percent REA guarantee of FFB loans be retained, and that loan levels be retained at the current $813.45 million floor and the $1.962 billion ceiling for FY 1991, with the caveat that additional loan funds may be necessary for rural electric systems to comply with Clean Air Act amendments in the out years.

Finally, we recommend a $10 million appropriation to the Rural Development Subaccount for the purpose of encouraging rural economic development. This program is working well and merits continued support.

Thank you.

NATIONAL RURAL HOUSING COALITION

STATEMENT OF ROBERT A. RAPOZA, EXECUTIVE SECRETARY

Mr. Chairman, my name is Robert A. Rapoza and I am Executive Secretary of the National Rural Housing Coalition. NRHC lobbies on behalf of low income housing and rural development needs. We are pleased to submit this statement for the record.

We urge the Committee to reject the President's Fiscal Year 1991 budget for Farmers Home Administration (FmHA). It calls for deep reductions in federal rural housing programs for the poor. The Administration has proposed more than a 50% cut in direct loans for low income home ownership and for a new subsidized loan guarantee program. There is substantial evidence that this approach will not work.

NRHC Recommendations

We strongly support an increase in rural housing programs in FY '91. The appropriation for rural housing increased by about $100 million in FY '90. We believe that $500 million should be added in FY '91.

We also support an increase in rural water sewer loan and grant funding in the coming fiscal year. As of December 4, 1989 the backlog of qualified pre-applications and applications for this assistance totaled over $1.4 billion. We urge the Committee to increase water-sewer funding by $300 million. Of that amount, $200 million should go to grants which make projects affordable to low income communities.

The Fiscal Year 1991 Proposal

The rural housing budget includes the following:

*** Direct lending for rural housing is slashed from $1.906 billion to $1.027 billion.**

*** The emphasis of the rural housing lending programs for home ownership is shifted toward moderate income households. Section 502 direct loans for low and very low income households are cut from $1.31 billion to $609 million. Two new loan guarantee programs are proposed for home ownership: a subsidized program for low income, proposed for $297 million; and an unsubsidized program for above moderate income individuals proposed for $297 million. As a result, the direct loans made to low income households will fall from about 25,000 to about 10,700.**

*** Section 515 rural rental housing loans are cut from $571.8 million to $391 million and rural rental assistance is reduced from $297.3 million to $258 million. Unit production will fall from 15,927 to 10,900.**

*** Self help housing grants and site loans are eliminated.**

The Administration Plan - It Will Not Work for Low Income Households

Home Ownership

If approved, the FY '91 budget will dramatically reduce single family housing development for low income households. The Administration not only cuts the direct loan level, it also shifts authority for single family loans to loan guarantees and to moderate income households, rather than low income households.

Loan making will become more complex as many low income borrowers will be required to obtain a loan from a conventional lender. This will be used with an FmHA guarantee and an interest credit subsidy to finance home ownership.

To the detriment of poor households, interest subsidies will be limited to an average of 5 points, which is less than current law. This will further shift the emphasis of what is now a low income program to higher income households.

Under the guarantee program, an interest subsidy will be taken on the cost of private sector mortgage lending. This rate is not only higher than the government rate but it is also greater than that of most metropolitan area banks. The budget, therefore, proposes a limitation on the amount of subsidy that is available because it costs more to subsidize a bank loan than to subsidize a government loan. As a result, the Section 502 program will no longer serve very low income families as required by law.

The Administration relies on local financial institutions to provide mortgage credit. There is little evidence that rural financial institutions are willing or able to pick up the slack. For example:

* The S&L crisis has had a significant impact on rural institutions. According to a recent USDA Economic Research Service report, the rate of increase of rural thrift insolvency is nearly twice that of urban areas. There has been a 20% drop in the number of solvent thrifts operating in rural areas between 1983 and 1987, and energy belt states have been the hardest hit. The number of rural counties without an S&L increased from 502 to 574 over the last five years.

* There is little evidence that rural financial institutions provide uniform terms and conditions. For example, a recent draft report completed for the Center for Community Change found that a bank in South Texas offered a 5 year mortgage loan with a 30% down payment; until 1989 no other financial institution in the area financed private mortgages.

* Across the country rural residents typically pay one-half percent more in interest charges for mortgage credit than urban residents. Most rural residents must repay in 21 years, rather than the 29 year average repayment term of urban residents. Both these factors mean that monthly payments on a $50,000 loan are roughly 15% higher in rural areas than in urban communities.

In recent years, FmHA has shifted its agricultural lending from direct to guaranteed loans. The results have not been impressive. For example:

* Local financial institutions have shown little interest in guarantees. While the total authorization for farm operating and ownership guarantees increased from $1.75 million in 1983 to $3.3 billion in 1988, obligations never exceeded $1.6 billion. During the same period, FmHA obligated all direct loan funds.

* Losses have been high. Since 1984 losses on guaranteed loans have increased at a faster rate than guaranteed loan activity. FmHA estimates that losses could exceed $115 million in FY '89 alone. GAO has strongly criticized FmHA's performance in managing the guarantee program.

* Existing FmHA borrowers have not been helped by guarantees. According to GAO, the increase in direct loan obligations was not a result of direct loan borrowers receiving guarantees. Rather, the increase occurred principally because private lenders obtained credit for their existing commercial customers who were experiencing financial difficulties.

Rural financial institutions are not in a position to take on a new guarantee program. The precarious nature of the thrift industry, the lack of uniformity in lending practices, and the high cost of credit make the implementation of a uniform guarantee program for low income people unlikely.

Beyond this, there is little evidence to indicate that FmHA has the capacity to adequately and efficiently administer a new guarantee program. Losses in a comparable farm lending program have been high and it is clear that lenders have used the program simply to shift borrowers to a government guarantee, thereby covering their mistakes. Borrowers who previously participated in FmHA programs, and who by definition have limited resources, were unable to obtain a private sector loan to be guaranteed.

There is great demand for Section 502 loans. In FY '89 close to 140,000 households submitted applications; only 48,766 or 35% of the households submitting applications were approved.

Rural Rental Housing

The budget proposes a one-third reduction in rural rental housing funds. This cut flies in the face of substantial evidence that there is a severe and growing shortage of affordable rural rental housing and a great demand for FmHA rural rental housing and rental assistance programs.

Important facts:

* In 1970, there were approximately 500,000 more low rent units in small towns and rural areas than there were renter households.

* By 1985, there were 500,000 fewer low rent units in non-metro areas than there were renter households. Beyond this, there were 2.5 million low income renter households, but only 2 million low rent units. And, of the 2 million units available, only 1.3 million were occupied by low income households.

* As of January 1990, FmHA had on-hand eligible pre-applications and applications for rural rental housing totalling over $2 billion or close to four times the FY '90 appropriation. In order for a pre-application to be considered eligible, the market or need for the project must be proven.

Rural Housing Need

According to the National Housing Task Force, some 4.3 million low income households in non-metropolitan areas currently experience housing problems. Of this number, close to two million have significant problems with the units themselves, including a lack of plumbing.

Low paying jobs and the seasonal nature of work, coupled with the downturn in natural resource based economies important to rural America, have prevented our small towns from participating in the recent improvement in the nation's economy. Non-metropolitan areas now have a higher rate of poverty and unemployment than our big cities.

Funding History

Rural housing programs were increased by about 5% in FY '90, the first increase in funding since 1981. Between 1982 and 1989, rural housing programs were reduced by more than 50%.

The bulk of FmHA funding is in the form of subsidized loans. Some $1.31 billion is provided for single family loans under Section 502. Close to 90% of 502 loans are in rural areas with populations of less than 10,000. The average annual income of Section 502 is about $13,500 and the law requires that 40% of Section 502 mortgage aid go to very low income households (50% of median).

Some $570 million is appropriated for FY '90 for the Section 515 loan program. Section 515 provides reduced interest loans to public and private sponsors to finance the acquisition, construction and repair of multi-family housing for low income and elderly households. The average annual income of Section 515 tenants is about $8,000. About 40% of all Section 515 units are occupied by elderly households.

Virtually all FmHA housing assistance is limited to low income households -- those with incomes at or below 80% of the area median income. In FY '89 close to two-thirds of FmHA assistance went to very low income households -- those with incomes which do not exceed 50% of the median income.

Despite serving poor households, the FmHA program has been remarkably successful in protecting the government's interest. The default rate on rural housing loan programs is about 1%. The 90 day delinquency rate in rural housing loans is 1.5%. Over the years, some 2 million economically disadvantaged families have gained decent housing through FmHA housing assistance.

Thank you for the opportunity to submit this statement for the record.

NATIONAL RURAL TELECOM ASSOCIATION

STATEMENT OF JOHN F. O'NEAL, GENERAL COUNSEL

Mr. Chairman, Members of the Committee:

My name is John F. O'Neal. I am General Counsel of the National Rural Telecom Association. Our association is comprised of commercial telephone companies which borrow their capital needs from the Rural Electrification Administration to extend and modernize telephone service in rural areas. Approximately 1000, or 71% of the nation's telephone companies borrow from REA. About three- fourths of these are commercial telephone companies. REA borrowers serve over 5 million subscribers in 46 states. In accepting these loan funds, they assume an obligation under the act to serve the widest practical number of rural users within their service area.

Mr. Chairman, continuation of a strong REA program is very important to rural America. It is imperative that this vital program not be jeopardized by philosophical opposition or by unrealistic assessments of program needs. This Committee and the Congress as a whole have strongly supported the REA telephone program since its inception in 1949. We appreciate your past efforts and look forward to an even stronger REA program for the future.

We are proud to state once again for the record that there has never been a default in the REA telephone program. All loans have been repaid in accordance with their terms with interest. At the end of FY 1989, a total of over $3 billion in principal and interest had been paid by borrowers.

Ongoing Need for the REA Telephone Loan Programs

The need for the REA loan programs is as great today as ever before, possibly even greater than in the past. Much of the telephone plant in rural America was installed in the early 1950's and will soon be due for replacement. Technological advances make it imperative that rural telephone companies upgrade their systems to keep pace with these improvements and provide the latest available technology to their subscribers.

The REA loan programs have successfully increased the availability and quality of telephone service to rural homes and businesses. But the task is far from complete. New communications technology and the huge increase in computer use are leading us into a new Information Age.

As the rural infrastructure keeps evolving, the potential benefits for rural life and the rural economy are impressive. Interactive optical fiber can provide education opportunities in even the smallest towns comparable to hiring many extra teachers. Using communications for medical diagnosis, monitoring and even treatments like heart defibrillation can help combat the shortage of doctors and the rash of rural hospital closings. Improved emergency services can save lives. Businesses like telemarketing and insurance can thrive in rural areas, and telecommuting can become a realistic employment option. The success stories of Land's End in rural Wisconsin and the Citibank credit card operations outside Sioux Falls, South Dakota, would not be possible without modern telephone plant, including digital switching. In fact, there are also "cautionary tales" about businesses that can't expand or locate in rural America because the telephone system can't provide on line ordering yet.

The REA programs are already providing financing for digital switches, more fiber between central offices and for school and medical communications facilities, helping rural communities to reap the benefits of technology. In the future, improved technology and decreasing costs will allow broadband service to American homes and businesses. The FCC's Chairman has said wide broadband deployment is "essential to our continuing prosperity and global leadership."

The REA programs are as necessary now as they ever have been: The NTIA Telecom 2000 report warned that unless rural areas are able to keep pace with urban technology upgrades, the widening gap in capabilities will make rural areas less attractive to businesses and people. Without an improved telecommunications infrastructure, as a recent Aspen Institute report put it, "major portions of rural America will be consigned to steady economic decline."

The amount of loan applications pending at REA are indicative of the increasing demands for upgraded service to rural areas. At the end of FY 1989, completed telephone loan applications at REA totaled $145.8 million. During the current fiscal year, additional applications totaling $187 million have been completed. As of January 31, 1990, REA had a total of $299.4 million in completed applications on hand for telephone loans. I know the Committee will agree that these figures, furnished by REA, amply demonstrate the ongoing need for this important program at current levels.

Because of continuing budget constraints, our association is recommending again this year that loan levels be retained at last year's levels. These are the ranges your Committee approved for FY 1990:

REA Insured Loans	$239.3 - 311.0 Million
Rural Telephone Bank Loans	$177.0 - 210.6 Million
REA Loan Guaranteeds	$119.6 - 138.8 Million

However, if the committee's budgetary allocations permit, we would request that the agency be required to approve loans, to the extent there are qualifying applications, up to the maximum allowable amounts within the ranges prescribed.

Administration's FY 1991 Proposals

Proposals contained in the President's budget again this year would severely curtail and phase out the REA program as we know it. For FY 1991, the administration proposes to eliminate insured and 100 percent guaranteed loans in their entirety and partially substitute 70 percent guarantees of private sector loans in the amount of $100 million for both programs. In addition, the administration seeks to accelerate privatization of the Rural Telephone Bank and repeal many of the bank reforms adopted in the 100th Congress.

Mr. Chairman, there are no new initiatives or any new thinking here. Most of these proposals have been made to previous Congresses and rejected. Also, there still have been no studies conducted which would support such radical proposals. No one knows for certain what the full impact or effects would be. But, whatever the potential impact, we know one thing is certain: rural telephone rates would increase further and service levels would surely deteriorate. For these reasons, we oppose them again this year.

Lack of Availability of Private Credit

Critics of REA argue that the need for the program is over because borrowers have the ability to borrow from private sources. But let us examine that. Private market lenders normally require 50 to 60 percent equities before they will extend credit. Based upon the latest available REA statistics, the average telephone borrower at the end of 1988 had a net equity of only 35 percent. Private lenders also require a one and one-half times interest coverage ratio test and prefer a ratio of 2 or higher. Most borrowers cannot meet the minimum test much less the preferred one. Also, it is important to note that most REA borrowers in relation to other telephone companies are very small and the territory they serve is extremely sparse. They serve over 1 million square miles or 34.5% of the territory but less than 5% of the telephones. The average borrower serves 982 route miles of line. The median borrower has only 2,219 subscribers. Borrower density is about 4 access lines per square mile. In contrast, the regional Bell operating companies average over 80.

Because of the relative small size of these loans, individual borrowers could not go to the private credit markets for capital. Even those few borrowers which could obtain credit in the private markets would find the terms extremely burdensome. Most banks or other lenders either will not or cannot make the long-term loans that are necessary for telco plant investment. Banks typically will lend for no more than 15 years in contrast to REA's loans of up to 35 years. And, of course, the interest rates would be prohibitive if the loans would be made at all.

Who would pay for these increased costs? As utilities whose rates are based upon their costs, increases in costs would necessarily have to be borne by rural ratepayers who are already burdened with extremely high rates. Federal access charges alone now total $3.60 per month and the cost of providing service in these high-cost, low-density areas continues to escalate. The REA loan programs provide targeted assistance to these areas.

Rural Telephone Bank

In 1981, Congress authorized the additional government purchase of $300 million of Class A stock from the Rural Telephone Bank in the amount of $30 million per year for 10 years. Again this year, the President's budget contains no request for this funding.

The Rural Telephone Bank is the cornerstone of financing for REA telephone borrowers for the future and hopefully, will be the institution which will ultimately provide for all of the debt capital needs for rural telephone systems. Fulfillment of the Bank's capital structure is a vital factor in this process. Unless the authorization is extended, FY 1991 is the final year for the infusion of government capital. Therefore, we respectfully request that the Committee continue the appropriation of $28.7 million next year (which is the same amount provided last year) for government purchase of Class A stock in the Rural Telephone Bank.

Conclusion

Mr. Chairman, the REA program continues to face its greatest challenges. However, it withstands these annual assaults because it is a sound federal program that is time-tested and works. And, it is needed today more than ever before. Rapid technological change and federal policies of competition and deregulation in the telephone industry underscore the need for targeted assistance to rural areas. Rate pressures in rural areas are already burdensome with predictions that some rates will double or even triple in the foreseeable future. Without the credit assistance provided by REA, even greater pressure would exist for rate increases.

The value of this assistance to rural ratepayers continues to far outweigh the costs.

Also, many fail to recognize that without the REA program the quality of telephone service in rural areas would also

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deteriorate. That is certain because the REA Act imposes a higher standard of service than would otherwise be required of borrowers. In the old days, if carriers provided service at all in rural areas it was only down the main roads because service on any other basis was not economically feasible. Today, thanks to the Congress and the REA legislation, telephone service is provided to the "widest practical number of rural users" in each borrower's service area -- a mandate that REA strictly enforces.

Thanks to the efforts of this Committee, a substantial impediment to loan advances and approvals has been eliminated -- REA's general funds restrictions. We hope and recommend that the Committee continue to extend the general funds prohibition in the FY 1991 bill. Otherwise, the successful operation of the REA telephone program would again be jeopardized.

We also appreciate the inclusion for the past two years of a provision which precludes REA from attempting to regulate the order or sequence of advances to borrowers under approved loans and request that this provision also be included in this year's bill. In the absence of such a provision, REA has indicated in recent regulations its intention to reinstate a procedure for controlling the order of advances on all outstanding loans. Such action would again threaten the orderly advance of funds to borrowers on approved loans.

Thank you again for the opportunity to present our views concerning this vital program which is as worthy and necessary today as it was when enacted in 1949.

NATIONAL RURAL WATER ASSOCIATION

STATEMENT OF CLARK CRONQUIST

Mr. Chairman, thank you for allowing me, as a member of the North Dakota Rural Water Systems Association and a Board Director of the National Rural Water Association (NRWA), to appear before your Committee today. I am here on behalf of rural water folks all over this country to thank you for the generous and very important increase given the rural water and sewer grant program last year. These funds are being used to great advantage by many small water systems to improve people's health, strengthen local economic opportunity and assure that rural America stays strong. We want also to express our deepest appreciation for your help in providing an increase in our rural water circuit rider program last year which has enabled us to strengthen the program in all states. We are here today to request the continued support of you and the Committee for these two very important rural programs and for the recently established rural waste water Circuit Rider.

Specifically, we are requesting:

- funding for the FmHA rural water and sewer grant program at $300 million and the loan program at $600 million
- funding for the Circuit Rider technical assistance program at $3.7 million to allow for a more intense use of circuit riders in areas of the country affected by the most serious environmental problems.
- funding to allow the rural water wastewater treatment Circuit Rider program to be expanded beyond the existing 24 states to cover the rest of the country. This would require an additional $1.2 million.

Our primary reason for requesting the increase in the water and sewer grant and loan program is the growing recognition that water and sewer services are a basic element to rural development in this country. As environmental and health expectations rise, the need for safe and clean water has become a necessity for rural residents. Community water systems provide this service. FmHA grants and loans allow those residents to build systems and to repay the loans over an extended period. Without the current assistance from FmHA, most rural residents could not initiate the construction of new systems and the expansion of existing ones. Additional funding will allow more rural Americans the opportunity to have access to a safer water supply.

In watching the debate over new rural development legislation in the House and Senate, many of us were struck with the fact that the rural water and sewer program has such broad support in Congress. However, we were also very aware that without your personal support of the program and the support of this Committee, that the program would not be operating today. It is impossible to overestimate the debt that rural America owes you for standing firm for rural water over the past nine years.

The importance of these FmHA funds grows each year as the Federal government presses for higher and higher environmental standards on small water systems. The goal of FmHA has always been to bring safer drinking water to rural residents. However, now EPA has strengthened its role through both the Safe Drinking Water regulations and the deadline on compliance with the Clean Water Act. These federal requirements are dramatically increasing the cost of managing rural water and rural wastewater systems. In response, small communities have gone to their state governments for help and in some cases have received new resources. However, in these and other cases it would be impossible to gain new financial support without the critical "seed money" that the FmHA grant funds provide for projects in low income areas of each state. These grant funds are highly leveraged and the increase in the grant program is having a multiple impact on the improvement of small water and sewer systems throughout the nation.

This funding is vital to most small water systems because rural water districts do not have the legal standing to float bonds, levy taxes or seek other types of public financing. Private financing as a sole source has seldom been an alternative because of its high cost and consistent unavailability. With a repayment rate on FmHA water and sewer loans of over 99.6%, this is probably the soundest government loan assistance program in the nation. Unfortunately, it is also the reason that these loans were included in the government loan asset sale.

The Environmental Protection Agency continuously cites the FmHA rural water grant and loan program as the major source of funding assistance to help small rural systems meet SDWA requirements. During Congressional testimony, a question to EPA received the following response:

> The Agency has met with the FmHA in an effort to ensure that adequate financial support is and will continue to be available to small water systems to meet additional requirements imposed by the Safe Drinking Water Act.

In effect, we have one federal agency imposing regulatory requirements and counting on another agency (FmHA) to provide funds to support compliance. While we may not like the way this came about, it is the way it is in rural areas and the FmHA grant and loan program is critical to SDWA compliance. The second area of our concern is the assistance available to help improve the operation and maintenance of existing rural water systems. Most rural water systems were developed because neighbors got together and decided that something had to be done about the poor quality or lack of water. These people formed water districts, signed up customers, borrowed funds from the only source available - FmHA - and set up a small water system operation with part-time personnel.

These systems are as varied in their size and structure as rural America itself. Many users are still small "mom and pop" operations; others have grown from a few hundred households to several thousand, while many small towns are having serious operational problems with old and worn out water systems. The common problem among these systems is the need to improve the quality of the water while continuing to provide water in the most cost effective manner possible.

What has evolved from this need is the rural water circuit rider technical assistance program now operating in forty-eight states, thanks to the action of this Committee last year. There is one Circuit Rider in North Dakota and we hope to expand the waste water Circuit Rider program to include North Dakota this year. A full-time rural circuit rider, working under the oversight of each state rural water association, is available to provide hands-on assistance and guidance to all rural water systems in every state regardless of size or problem. This has allowed many rural systems to steadily improve the efficiency of their operation and the quality of the water delivered. In FY 1989, the North Dakota Circuit Rider program assisted rural water systems with 466 Technical Assistance contacts in every county in the state -- an average of 39 technical assistance contacts per month. Almost 50% of these contacts made were in response to direct calls for help from water and waste water system personnel. Circuit Riders have saved significant amounts of money in preventing water loss, reducing the need for replacement of pipes, pumps and other equipment and in working with systems to set adequate water rates in order to provide funds for continuous preventive maintenance.

During this past year, the Circuit Riders have visited over 23,500 rural water systems throughout America to provide hands-on help. The new state circuit riders in the additional states have expanded their activities. We believe that having a national border to border program is having a dramatic impact on the upgrading of small water systems in those areas with the most serious water problems.

In addition to the rural water Circuit Rider, twenty-four state rural water associations participate in the FmHA funded rural waste water Circuit Rider program. Funding for the Circuit Riders is received through the two percent FmHA technical assistance program and has been extremely important to small rural waste treatment systems. With Clean Water Act compliance deadlines this year, many small systems are being cited for non-compliance. With the Federal waste water funds winding down and the use of a revolving loan fund required there is a growing need for on-site assistance to guide these systems in meeting higher standards. As with many small water systems, the funding help is limited, but the federal requirements are being expanded. We are finding that the waste water Circuit Riders are frequently the only help available to small sewer systems and that demand for help is often even greater than that from small water systems. By providing $1.2 million to this program this year, Circuit Riders would be operating in all 48 states.

Finally, we want to express our thanks to this Committee for eliminating the proposed sale of $120 million in FmHA community facility loans in the President's FY 90 budget. We realize that past asset sales and repurchase programs were necessary in order to meet Congressionally mandated federal budget deficit reduction targets. However, this is not a good program and we urge you to continue to eliminate any rural water loan repurchase program as part of future federal asset sales.

In the sale of assets program there is an additional problem faced by many small systems. In order to prevent the sale of FmHA loans to the New York Investment companies, many small systems repurchased their loans under the Congressionally mandated loan repurchase program. The repurchase of these loans left many systems without the protection of Section 1926(b) which assures that other water and sewer systems cannot be constructed parallel to the FmHA water or wastewater system. The reason is that the Federal government recognized that rural water systems covering a large geographic area depend heavily on the more densely populated rural areas and that if these were lost, the overall financial viability of the rural water systems would be jeopardized. The same concern is faced by those water systems which have received grants as well as loans. If possible, we would like to have the FmHA 1926(b) provisions extended to protect rural water systems with FmHA grants as well as those with FmHA loans.

One special request we are making is that you consider increasing the funding for the circuit rider program to $3.7 million a year to provide for circuit riders in high environmental risks areas. The SDWA requires small water systems to test for over eighty new contaminants over the next three years. Circuit Riders have been the primary assistance available to the smallest and most out-of-compliance rural systems.

In closing, we want to again thank you for your past support of rural water and to urge you to increase the funding level for the FmHA rural water loan program to $600 million, increase the FmHA grant program to $300 million and provide $3.7 million for the Circuit Rider program.

NATIONAL TELEPHONE COOPERATIVE ASSOCIATION

STATEMENT OF MICHAEL E. BRUNNER, CHIEF EXECUTIVE OFFICER

Mr. Chairman, distinguished members of the committee, my name is Michael Brunner and I am the Chief Executive Officer of the National Telephone Cooperative Association (NTCA) which represents nearly 500 small locally owned and operated rural cooperative and commercial telephone companies in over 40 states. Because the majority of NTCA members participate in the Rural Electrification Administration (REA) and Rural Telephone Bank (RTB) telephone lending programs, I appreciate this opportunity to review the ongoing necessity of these programs with you.

The REA/RTB telephone lending programs have played a vital role in developing the nation's rural telecommunications infrastructure. Despite rural telephony's great strides since the foundations of the REA telephone lending programs were first laid in 1949, our job is not yet complete. Continued funding of these programs will be necessary to meet the many challenges of tomorrow. That is why NTCA is once more recommending that appropriations for REA/RTB remain at their current levels for the coming fiscal year. To further ensure the successful operation of the programs, NTCA requests that the Committee once again include language in the appropriations bill and the accompanying report that continues the general funds prohibition and addresses the sequence of loan drawdown provision, the full staffing request and the conducting of audits issue.

Allow me to digress just a moment. Today, through the foresight of visionaries such as yourselves, rural telephony is stronger than ever before. Rural telephone systems presently serve over 5 million homes, schools, churches and commercial enterprises throughout the U.S. states, territories and commonwealths. In addition, rural telephone systems have helped start and expand thousands of new public and private projects. These efforts have produced hundreds of thousands of new jobs. In fact, rural telephone systems alone employ nearly 30,000 full-time workers.

Unfortunately, these amazing successes have led some to question the necessity of maintaining the REA/RTB telephone lending programs into the 21st century. As I have stated, Mr. Chairman, despite the telecommunications industry's outstanding progress in serving rural America, much remains to be done. And, this task cannot be accomplished without the REA/RTB telephone loan programs.

Recent U.S. Census Bureau data show that over 2 million rural households remain without even the most basic form of telephone service. In addition, in order for our rural communities to remain competitive with urban centers, telecommunications infrastructure must constantly be upgraded. Further, the federal government has long sought the implementation of universal telecommunications infrastructure and service. It can hardly be denied that the REA telephone lending programs are essential to achieving that policy objective.

Mr. Chairman, in recent years, much has been written about this "Information Age" we currently find ourselves in. Not surprisingly, the telecommunications industry is playing the leading role in bringing this "age" to Americans across the country. As the volume of information that is available to Americans grows, so too does the pace of technological advances for handling this material. In the 1980s, we observed the concept of fiber optic transmission evolve from dream to reality. Compared to older wire transmission infrastructure, the capabilities of fiber optic line appear almost limitless. In addition, switching capability has steadily evolved from a mechanical to a computerized digital nature. These "wonders" have brought the world to our homes and offices. Unfortunately, such advances do not come without cost.

Meanwhile, Americans have begun to rediscover rural America. In decades past, scores have left these peaceful havens for what was perceived to be more promising futures in terms of economic stability and quality of life. Yet as population, pollution and the cost of living escalate in our urban centers, this theory is being reexamined. The nation's rural areas offer unlimited resources to individuals, small businesses and corporations. Yet one problem has persistently stood in the way of economic development in rural areas -- distance.

Its never been a secret that distance is a rural region's greatest obstacle. Concurrently, its no secret that in today's hi-tech world these obstacles can be easily overcome through the use of advanced telecommunications infrastructure. In other words, telecommunications development can play a major role in determining the economic viability of the nation's rural communities. We have shining examples of this all across the country. Lands' End, Inc. was a small clothing retailer that moved to rural Dodgeville, Wisconsin in the early 1960s. Today, largely due to its 800 number communications link with the country, the company is a several hundred million dollar-a-year-business which has had an enormous economic impact on its surrounding rural community.

Not all rural development will or should be on this grand a scale. Cottage industries have sprung up around the country and they can utilize telecommunications links for data transmission or other projects. The point to keep in mind is that rural development is attainable and there are hundreds of examples of successful initiatives that were made possible largely through the development of local telecommunications infrastructure. Major obstacles can be overcome through local leadership and modest investment by the federal government (in the form of REA/RTB loans). Without REA, a majority of this development would be difficult to attain.

President Bush's first budget proposal which was released in early 1989 displayed a lack of appreciation for the value of the REA/RTB telephone loan programs. Though initially alarmed by his proposals, our industry's fears did, for a time, subside as the President steadily unveiled his rural conscience. First, the President ordered a critical review of the United States Department of Agriculture's (USDA) rural development programs. From this, recommendations for improving the programs' performance were developed. Later President Bush issued a white-paper outlining his thoughts on the rural agricultural sector. He also instructed his appointees within USDA to remain vigilant to the needs of all facets of the rural economy. In addition, President Bush endorsed a comprehensive plan formulated by his Economic Policy Council's Working Group on Rural Development. Finally, his Administration endorsed the concept of rural economic development and encouraged accomplishing it through enhancement of existing programs. Overall, the President appeared to embrace a genuine concern for rural America and its many needs and we expected bold new ideas and strong support for the REA/RTB telephone lending programs in FY 1991.

Imagine our disappointment to discover that the President's FY 1991 budget proposes to restructure the REA and RTB telephone lending programs in such a manner as to render these effective rural development tools virtually useless. Specifically the President proposes to: terminate the REA direct and guaranteed loan programs; prohibit further capitalization of the RTB; reduce annual RTB direct loan limits from $177 million to $125 million; increase the RTB direct loan rate to market level; initiate a new RTB 70% guarantee program; establish a sliding scale loan origination fee; reinstate the REA's restrictive general funds and loan draw down policies; and to clearly establish the objective of RTB privatization in 1995.

Mr. Chairman, as you can see, the Administration is proposing to abandon a time tested and financially stable direct loan revolving fund in favor of unworkable and ill-conceived alternatives. NTCA and its members are not in a position to accept such philosophical changes. Our rural areas are sparsely populated and the terrain often difficult to overcome. As the telecommunications industry continues to undergo vast change, new competitive forces are always evolving. These factors equate heavy costs. The capital that is necessary for rural telecommunications development often leaves many of our members with a questionable paper-equity, and commercial lenders generally will not lend in these situations -- especially with only a partial government guarantee.

Rural areas by way of their sparse populations remain costly to serve. Were these rural telephone companies forced to borrow exclusively from private sector lenders, the rural infrastructure could very well languish to the point where the differences between rural and urban telephone service would appear similar to the disparity we knew in the 1950s.

The Administration also fails to understand that the REA/RTB direct loan programs are revolving funds and as such do not require vast capital outlays by the federal government. The only real cost associated with the programs are the relatively minor difference in the cost of interest to the government and the rate at which it is loaned to borrowers and of course those associated with the normal administration of the program. These costs are all Congressionally mandated. The Administration should acknowledge the fact that principal and interest payments are continually returning to the programs, but that government accounting and budgeting methods do not reflect this return accurately. This is simply playing with the numbers of a program the Administration probably does not wish to maintain. The real costs of the programs are minimal, especially in comparison with the benefits the programs provide.

Mr. Chairman, the very foundations of our country are rooted in rural policy. From the days of the Jeffersonian ideal that rural life is the source of all good in the American character through the present, national policy has been influenced to a degree by rural policy. We have worked so hard to ensure that America maintained its rural heritage and we must work equally hard in the future to ensure leaders of tomorrow do not overlook these regions as economic policies are developed.

Rural America can provide all Americans with a host of benefits, and making efficient use of its resources should be our highest priority. President Bush appears to have caught the spirit though it seems to conflict with other policies of his Administration. Specifically, the President recently broached the subject of telecommuting, where a person works from the home, utilizing the nation's telecommunications infrastructure to carry out their responsibilities. The President claims that by telecommuting, air pollution could be reduced, energy could be conserved and overall quality of life would improve for thousands of Americans. President Bush went on to laud the concept of telecommuting as a promising flexible workplace policy that employers should investigate.

In light of this endorsement and the need to bring the "Information Age" to rural America, NTCA would suggest that the President and his team reevaluate their assessment of the future necessity of the REA/RTB telephone lending programs. They are necessary, they are valuable and they are economically feasible.

In closing, let me simply reiterate NTCA's FY 1991 appropriations request which is as follows:

- REA direct loans -- $239,250,000;
- RTB direct loans -- $177,045,000;
- REA guarantees ---- $119,625,000;
- RTB capitalization - $28,710,000.

NTCA also requests that language on general funds, sequence of loan draw downs, full staffing and conducting of audits be included in the bill and report language.

Thank you for your time and your kind consideration of our requests!

NATIONAL TURKEY FEDERATION

STATEMENT OF STUART E. PROCTOR, JR., EXECUTIVE VICE PRESIDENT

Introduction:

Turkey Osteomyelitis Complex (TOC) is a musculoskeletal infection which is found in turkeys throughout the United States. Osteomyelitis (OM) is an inflammation of the bone which may be caused by a variety of organisms. Losses to the turkey industry amount to approximately $10 million per year. This does not include 1-2% culls left on the farm and decreased processing efficiency. Losses are incurred by growers and processors.

The National Turkey Federation requests that Congress specifically authorize $400,000 for OM research in the USDA ARS FY 1991 budget. NTF represents most of the nation's turkey growers and processors and accounts for more than 95 percent of the nation's commercial turkey production and marketing.

Background

On August 14, 1988, the Food Safety and Inspection Service (FSIS), USDA instituted a program to inspect turkey carcasses with green liver discoloration for TOC because of food safety concerns about the presence of *Staphylococcus aureus*, the most frequently recovered organism from TOC. Turkey osteomyelitis complex consists of any inflammatory lesion of the musculoskeletal system, including osteomyelitis, synovitis, arthritis, myositis, and tendonitis. Turkeys with TOC usually have concurrent green liver discoloration and TOC is usually caused by *Staphylococcus*, a potential human pathogen.

During the first eighteen months of the program, over 1.6 million of a total of 349 million carcasses were retained for TOC examination. Of the 1.6 million carcasses retained, only 543,525 (33%) had some evidence of TOC. Conversely, of carcasses retained for TOC examination 796,040 (65%) had no evidence of TOC. Conservative estimates of annual product loss alone in the turkey industry have been put at $10 million. This does not include an increase of 1-2% culls in tom flocks left on the farm and not processed due to lameness. Decreased processing efficiency results in additional economic losses.

Losses from TOC could be reduced in two ways: 1) increase accuracy of identifying TOC positive carcasses among those with green liver discoloration, and 2) reduce the number of turkeys with green liver discoloration (with or without TOC) being processed. Knowledge about causes of green liver discoloration and TOC, and how they may be prevented is unavailable because the problem has only recently been identified. The purpose of the proposed ARS research will be to obtain information on this newly recognized, economically significant food safety and quality problem in the turkey industry.

Current Research

Three preliminary studies have been conducted in collaboration with the National Turkey Federation. While there have been some positive results additional research is needed to accurately identify, prevent, and control this disease. This is a national problem which needs national attention including research assistance from USDA.

USDA's Agricultural Research Service (ARS) estimates it would take two staff researchers to be assigned to an OM project to accurately identify the cause, prevention, and control. ARS estimates a cost of $400,000 per year. The study should focus on identifying the causes of OM; improving the accuracy of detecting OM birds and preventing the occurrence of OM.

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NATIONAL UTILITY CONTRACTORS ASSOCIATION

STATEMENT OF MIKE ELLIS, PRESIDENT

Mr. Chairman and Members of the Subcommittee:

The National Utility Contractors Association (NUCA) is comprised of 2,000 contractors, suppliers and manufacturers nationwide that specialize in the construction of water supply and waste water treatment projects. Many of the water and sewer systems built by our members are financed through the Farmers Home Administration's (FmHA) Water and Waste Disposal grant and loan programs.

As a result of our work in constructing the facilities financed by these important programs, I will take this opportunity to offer our industry's views on their effectiveness and future.

Reduced Federal Funding

I will begin by expressing the industry's deep disappointment in President Bush's proposal to once again curtail funding for the Water and Waste Disposal program in Fiscal Year 1991. For the past few years, dating back to the Reagan administration, Congress has been forced to battle for every last dollar for FmHA.

The FmHA Water and Waste Disposal programs and the Environmental Protection Agency's (EPA) Construction Grants program represent the federal government's major sources of financing for the nation's rural communities' water and sewage treatment facilities needs. Yet, once again, the Administration is proposing to cut a combined $530 million from these EPA and FmHA programs. This represents a 20% cut from the appropriation levels for these two programs in FY 1990.

Under the Bush proposal FmHA water programs would be cut 28% from the current $631 million to $450 million. This comes at a time when there are, according to FmHA, over 2,000 applications and preapplications pending representing over $1.3 billion in demand for funding.

Your Subcommittee and the Congress are to be applauded for the over $200 million increase that FmHA received for water and waste disposal projects from FY '89 to FY '90. However, as the $1.3 billion in current demand indicates, rural communities still have an acute and urgent need for water and sewer construction financing.

Funding for this program must be viewed in budgetary terms not as a liability, but as a long-term asset because it represents an investment in the future economic growth of our nation's underdeveloped areas. A sound network of water delivery and sewage treatment facilities is essential to the economic growth of these rural areas. Businesses and industries place the condition of an area's water and sewer system near the top of their list of criteria in determining whether to build, expand or relocate.

Adequate funding for these FmHA programs is also necessary to meet the needs of the public health. As we near the 21st century, it is an embarrassment that there are still places in our country where people must rely on outhouses for sanitation. And while septic tanks can be a useful alternative, malfunctioning tanks remain a major source of both groundwater and surface water pollution.

Water Pollution Control

Over the years, the FmHA Water and Waste Disposal programs have also proven to be an important source of financing waste water treatment construction needs mandated by the Clean Water Act.

It is important to note that EPA has been stepping up its enforcement policy against all communities and is requiring them -- often by court order -- to build sewage treatment facilities necessary to comply with federal water quality standards. As we have seen, the EPA construction grants and state revolving loan fund programs and these FmHA programs have been consistently under-appropriated over the past five years. In essence, EPA is saying, "You must construct these facilities. How you pay for them is your problem." The FmHA programs are often the "safety net" for rural communities who have a hard time competing for scarce EPA construction funding.

Retainage

Last year, this Committee included language in the Conference Report (H. Rept.101-361) accompanying H.R. 2883, the Agriculture appropriations bill (P.L. 101-161) instructing the Farmers Home Administration to make allowances for differing state requirements on retainage on construction contracts. FmHA requires ten percent retainage on partial payments until 50% of the project is completed in conflict with many state laws which require much lower percentages.

When a similar situation arose with EPA contracts, the agency changed its regulations to allow for differing state requirements on retainage.

We have received early indications from the Department of Agriculture (USDA) that they do not plan to revise their regulations and guidelines concerning retainage. This is a distressing development because the USDA is assuming that states cannot effectively set procurement requirements. If USDA persists in disregarding this Committee's report language, NUCA may request that statutory language be included in the next Agriculture appropriation measure to ensure compliance.

Conclusion

Mr. Chairman and members of the Subcommittee, I conclude by asking you to appropriate an adequate amount of funding in Fiscal 1991 for the Farmers Home Administration's Water and Waste Disposal programs. A funding level of $630 million, equal to that of last year, is certainly reasonable and responsible in light of the current need for this construction financing.

As a responsible business group, the National Utility Contractors Association supports a balanced federal budget. But given the figures cited earlier in my testimony, which indicated a proposed 20 percent cut in federal funding for water supply and sewage construction programs, we feel strongly that the construction area of the federal budget has already done more than its fair share in reducing federal spending. Any reductions will not reduce the need for financing, it will only postpone construction and result in even higher costs in future years.

This program is important, it is efficient and, above all, it is working. I strongly urge you to continue your past support for adequate funding for this program in Fiscal Year 1991 and beyond. Thank you.

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STATEMENT OF THE NEBRASKA NATURAL RESOURCES COMMISSION

The Nebraska Natural Resources Commission is a state agency with the responsibility of assisting the state's 23 Natural Resources Districts with a number of conservation programs. The Commission also works closely with several of the Federal conservation agencies, such as the Soil Conservation Service and the Agricultural Stabilization and Conservation Service. Our statement is directed toward the Soil Conservation Service budget and funding for the Agricultural Conservation Program (ACP).

The Commission recommends that the SCS Conservation Operations ongoing programs be funded at $469.0 million for FY 91. Other funding recommendations include River Basins at $12.5 million, Watershed Planning at $12.0 million, Watershed Operations at $200.0 million, Resource Conservation and Development Programs at $35.0 million and the Great Plains Program at $25.0 million.

As a sidelight, the Nebraska Natural Resources Commission has a keen interest in reauthorization of the Great Plains Program. The program expires in 1991. The Great Plains Conservation Program has been of considerable value to our part of the nation. We would like to see that program reauthorized separately, rather than as a part of the 1990 Farm bill.

We also strongly support the recommendation of the National Association of Conservation Districts that an additional $60.0 million be directed toward personnel support to aid in implementation of the conservation provisions of the 1985 Food Security Act. The Association's suggestion that $35.0 million be set aside for the U.S.D.A. Water Quality Initiative meets with our hearty approval.

We also recommend that the Agricultural Conservation Program be funded at the $200.0 million level.

This program has been very effective and should be maintained. Nevertheless, some consideration should be given to "capping" this program in the near future, with the savings redirected to the Agricultural Conservation Program.

Since the Commission and the 23 Nebraska Natural Resources Districts work closely with the Soil Conservation Service, we are very concerned that the President's budget proposes a nationwide SCS staff reduction of 360 people. Nebraska will no doubt have to share in that reduction but if it is carried out, the results will be devastating. Our agency and the 23 Natural Resources Districts of Nebraska are very concerned that the SCS be able to carry out its ongoing responsibilities and not be diverted and forced to focus exclusively to the Food Security Act. We have numerous conservation needs that require as much attention as the Food Security Act program.

As for implementation of practices required by the conservation provisions of the 1985 Food Security Act, our Nebraska SCS offices have 9 years of work to do in the next 5 if the 1995 goal is to be achieved. This workload could even increase substantially, since numerous farmers in the state have opted for Alternative Conservation Systems plans. In our opinion, many of these operators and landowners will find such practices require a very high degree of management to stay in compliance. Landowners can be expected to ask for substantial changes in their plans to secure more permanent conservation practices. These changes may require more time to accomplish than originally required for the initial plan.

Soil Conservation Service employees in Nebraska are also called on to take a very active part in water quality activities. We are of course pleased to have that technical expertise brought to bear. As we look at all the water quality programs in Nebraska, it is possible that these employees may be involved in as many as 32 different water quality programs. As members of this subcommittee may well recognize, Nebraska has growing ground water quality concerns. In that regard, we appreciate the emphasis placed on water quality by USDA agencies based on the President's Water Quality Initiative. But quite frankly, money merely moved from one pocket to another does little to achieve bigger and better solutions. Indeed, little is done for the overall conservation effort.

In summary, we urge Congress to support the full spectrum of Soil Conservation Service responsibilities and enact the budget for 1991 to assure the Service is permitted to provide the assistance required to carry out their assigned duties. From our viewpoint, a reduction in personnel at this point would be very untimely and could cause dramatic future problems.

Sound conservation policy is now in place. Program directives have been well thought out. Our Nation's farmers are now more than ever aware of the effort needed to protect soil and water resources. Public support is substantial. Your steadfast assistance of the past is sincerely appreciated, and please keep this important program foremost on you minds as you carry out your difficult task of resolving the budget for fiscal year 1991.

NONPRESCRIPTION DRUG MANUFACTURERS ASSOCIATION

STATEMENT OF DANIEL F. O'KEEFE, JR., SENIOR VICE PRESIDENT AND GENERAL COUNSEL

Mr. Chairman and Members of the Subcommittee, I am Daniel F. O'Keefe, Jr., Senior Vice President and General Counsel of the Nonprescription Drug Manufacturers Association (NDMA). I am pleased to be a member of this panel which has been invited to present testimony on the Administration's proposed budget for the Food and Drug Administration (FDA).

The Nonprescription Drug Manufacturers Association is the 109-year old trade association representing manufacturers and distributors of nonprescription, over-the-counter (OTC) drugs, such as pain relievers, cold tablets, cough syrups, and many others, some of which you probably have in your medicine cabinet at home. Many of these medicines are among the most commonly used consumer products in the United States, such as Tylenol®, Bufferin®, Tums®, Vicks®, and Bayer® Aspirin.

NDMA members -- both large and small companies -- account for approximately 95 percent of the sales of OTC medicines in the United States.

First, Mr. Chairman, let me say a few kind words about the Food and Drug Administration. It is one of the most significant regulatory agencies in our country. It has the tough job of protecting the nation's health by assuring that there is a constant supply of safe and effective drugs, as well as pure foods. The Agency has done an excellent job in carrying out its mandate of protecting the nation's health.

The Administration's request for FDA in Fiscal Year 1991 is for $685 million. We are aware that FDA faces important challenges now and we believe the Agency should be fully funded by tax dollars.

The Administration proposes that $157 million of the Fiscal Year 1991 budget be funded by the imposition of user fees for product reviews. This proposed fee would be paid by companies and charged by FDA for processing applications before the Agency. It would be a charge by the Agency for determining the safety and effectiveness from the public interest standpoint of petitions or applications before it. The $157 million user fee total includes $103 million for human drugs -- $58 million for new drug products, plus $45 million for generic drug product approvals. Last year, the Administration proposed $570 million in total funding, including $100 million in user fees. Congress, as members of this Subcommittee know, rejected the $100 million in proposed user fees and restored the full $570 million.

Mr. Chairman, in rejecting user fees Congress has acted on the wise advice of your Subcommittee which has considered and rejected user fees for several years as part of the appropriation process.[1] For example, last year, it flatly instructed the Administration not to propose user fees again. Your Subcommittee report accompanying the FDA's appropriation bill states:

> "The budget request assumes $100,000,000 to fund ongoing Food and Drug Administration [FDA] activities through user fee collections on product approvals regulated by law. The Committee rejects user fees as a mechanism for funding the FDA and concurs with the

> House in restoring $100,000,000 to the 1990 appropriation. The Committee continues to expect FDA budget request to be based on current law. (Senate Report 101-84 at 122).

Last year was not the only time the Subcommittee considered user fees. In fact, Mr. Chairman, your Subcommittee each year since 1985 has specifically rejected user fees as a funding mechanism for FDA. This has been reflected in each Subcommittee report. Last year in written testimony before your Subcommittee I provided you with this report language since 1985. I will not repeat this for the sake of time. However, the written record demonstrates the resolve of the Subcommittee against user fees based on the clear and convincing rationale that the New Drug Approval process provides a public benefit. The Nonprescription Drug Manufacturers Association agrees with the Committee that the NDA process provides a direct public benefit and, as such, should not be burdened with user fees.

The New Drug Approval process is mandated by Congress through the Food, Drug, and Cosmetic Act. It protects and benefits the public by establishing a rigorous examination and approval procedure prior to marketing of new drugs. The system is designed to protect and benefit the public. As Congress has recognized on so many occasions, it is conceptually wrong to ask industry to pay for it.

Mr. Chairman, in addition to general reasons against user fees, some of which are noted by my colleagues on this panel, from the standpoint of the nonprescription drug industry, we believe this charge, which we call a "Research and Development Tax", is particularly inappropriate for two reasons:

Deterrent to Switch

First, consumers benefit from the switch of proven-safe prescription drugs to nonprescription status. The switch of these drugs is frequently accomplished through the NDA process. The availability of these OTC products contributes to the nation's health care system by reducing health care costs to the consumer and to the government through medicare expenses. A tax imposed on companies considering use of the NDA system to request FDA to switch a drug from prescription to nonprescription status obviously would discourage that approach by making it more expensive. It would adversely affect small companies proportionately harder than larger ones.

Any artificial deterrent to the switch process would be a particularly bad result because the United States is already in danger of approaching a "self-care drug lag." Consumers in other countries are having made available to them even more products than FDA has to date made available for Americans. In Denmark, for example, since March 1989, consumers have been able to purchase OTC cimetidine for treatment of ulcers. Americans cannot. In Britain, Denmark and Sweden, consumers can buy 1% hydrocortisone for itching, without a prescription. Americans cannot. And in Britain, Denmark, Canada, West Germany and Switzerland, people can buy a non-sedating OTC antihistamine. Americans cannot.

It's obvious that these countries have competent drug regulatory authorities. Citizens in Europe and Canada don't significantly differ from Americans in the way they metabolize medicines, in their educational levels, or in their interest in assuming a greater degree of responsibility for their own health. But right now, they do seem to have greater access to products they can use in self-care. At best, if switch still

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takes place, the additional cost of a user fee will be passed on to the consumer as a hidden tax on the medicine.

Second, drugs switched from prescription to nonprescription status generally enter a product category already crowded with competitors. Since competition is so keen in the OTC industry, any additional entry costs in the form of a user fee on a New Drug Application would make it particularly difficult for smaller OTC companies to engage in switch. The result could be an unfair burden on smaller businesses.

Mr. Chairman, as I have said, we support full funding of FDA. It is important that the Agency be provided with whatever resources are necessary to carry out its congressionally-mandated public task and its needs in the years to come. However, we do not believe that industry should be charged for implementation of this public responsibility.

Mr. Chairman, that concludes my statement. I would be pleased to answer any questions.

Thank you.

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[1] Senate Report 98-566 at 122; Senate Report 99-500 at 131; Senate Report 100-203 at 125 and Senate Report 100-389 at 131.

OREGON/MASSACHUSETTS BIOTECHNOLOGY CONSORTIUM

STATEMENT OF JOSEPH CARTER, PRESIDENT

INTRODUCTION

The Commonwealth of Massachusetts and the State of Oregon have laid the foundations for a model interstate partnership in the field of biotechnology. This unique effort will build upon the respective strengths of the two states to enhance the development of the biotechnology industry nationwide. The partnership will focus on two main areas: the application of recombinant DNA technology to plant sciences and the development of strategies to improve the efficiency of small and medium-sized biotechnology companies, especially through shared facilities.

Both Oregon and Massachusetts have research centers with worldwide reputations. Oregon's three research institutions with programs in the plant sciences, Oregon State University, the University of Oregon, and the Oregon Graduate Institute for Science and Technology, recently have joined forces to pursue cooperative efforts in molecular plant engineering and bioprocessing.

These programs, combined with Oregon's abundant supply of natural resources and natural resource industries, provide a strong base for the application of biotechnology to agriculture, forestry, and the food industries. To build on this base, Oregon needs to develop regular mechanisms for taking the products of innovation to the marketplace. Massachusetts, through the public/private consortium known as the Massachusetts Biotechnology Research Institute (MBRI), has a highly successful record in this area. The MBRI continues to evolve new strategies for nurturing biotechnology companies at the earliest stages of development.

PROPOSAL

Purpose. In this proposal, the Oregon/Massachusetts Biotechnology Partnership is seeking federal support for the second year of a five-year research and development program.

The overall goals of the program and the partnership are:

- To expand basic and applied research in plant genetic engineering and bioprocessing;
- To enhance the commercial exploitation of innovations in biotechnology; and
- To foster education and training programs to support the development of diverse biotechnology industries.

The expected outcome is a working partnership serving essential research and economic development needs for the Northeast and Northwest regions of the United States and as a model for other multi-regional efforts to respond to the biotechnology initiatives of our major international competitors.

Results of the First Year. Grant funds provided to the Partnership in the first year of the partnership are being used to accomplish the following joint tasks:

- Establish effective working relationships between key organizations and individuals in the two states;
- Complete detailed inventories of biotechnology resources and needs in Oregon and Massachusetts to identify potential areas of collaboration;

- Support faculty research productivity in biotechnology;

- Plan a series of conferences addressing specific topics in biotechnology that will promote the transfer of knowledge and experience from one state to the other; and

- Carry out the first conference in the series, "Opportunities in Plant Molecular Biology: Plant Productivity, Plant Stress, and Biomass Conversion/Biodegradation."

- The Massachusetts portion will help support the development of college-level education and training programs conducted through the MBRI Innovation Center and the implementation of an industry-focused Bioprocessing Resource Center.

- In Oregon, the funds will be used to support faculty research and educational efforts in basic plant molecular biology and bioconversion and to strengthen the biotechnology infrastructure in the state.

Funding for the Second Year. Massachusetts and Oregon have committed a total of $5 million for biotechnology research and development projects to be carried out under the umbrella of the partnership during the second year. Because of the national importance of this effort, the two states are seeking an equal $5 million level of funding from the U.S. Department of Agriculture.

An additional $5 million in federal funding for the partnership (matched by Partnership expenditures) will be sought in each of the next three years.

The partners anticipate that at the end of the fifth year, the partnership will be self-sustaining through a combination of state support, industrial research contracts and peer-reviewed grants and contracts.

Administration. Overall responsibility for governing the partnership rests with an Oregon/Massachusetts Biotechnology Partnership Steering Committee. The Steering Committee will have an equal number of members from each state and will appoint appropriate advisory committees to deal with each of the three partnership goals, thereby ensuring participation of key groups and institutions in both states.

Operational responsibility for activities of the Partnership rests with the staffs of the MCEC and the Oregon Science Council. Direct management of specific projects and tasks will be the responsibility of each partner in a manner consistent with its intergovernmental, industry, and academic relationships and within guidelines associated with agreements between the Cooperative State Research Service and Oregon State University's Agricultural Experiment Station.

Funds for the interstate partnership will be held by Oregon State University's Agricultural Experiment Station. The funds will be distributed by the University to participating institutions in both states as sub-contracts for approved activities. All federal grant reporting requirements will be met by the University.

DESCRIPTION OF ACTIVITIES

Massachusetts. Funding for the Massachusetts component of the interstate partnership will be used primarily for the nonprofit elements of the Massachusetts Bioprocessing Research Institute Innovation Center, including the pilot Bioprocessing Resource Center and the versatile conference and educational facility. These will occupy 12,000 square feet of Biotech III in the Massachusetts Biotechnology Research Park.

The Massachusetts experience indicates that areas with a rapidly growing biotechnology industry--including small and medium-sized companies with limited resources--require some form of shared bioprocessing facility. Such facilities must provide equipment and specialized services in an industry-tailored, proprietary-controlled environment. There also is an enormous need for personnel trained in biotechnology manufacturing operations. Because of the lack of equipment and facilities at the university level, many graduates entering industry possess theoretical understanding of bioprocessing but lack practical, hands-on experience.

To meet the needs of businesses and universities in Massachusetts and the New England region, MBRI has begun construction of a Bioprocessing Resource Center Pilot Plant. This plant will be designed to support scale-up of microbial fermentation, tissue culture growth, and product separation and purification. Plant operations will be documented in accordance with Good Manufacturing Practice (GMP) guidelines established the U.S. Food and Drug Administration for the production of human therapeutic products.

Anticipated users of the facility include CBI portfolio companies, such as Alpha-Beta Technology Inc., and EcoScience Laboratories, Inc. In the past, these companies have had to use bioprocessing services as far away as Illinois and Texas. Also, five independent biotechnology firms in Massachusetts have expressed interest in a pilot production plant. One of these firms is the developer of a number of proprietary technologies for agricultural applications of genetic engineering, including the genetic modification of rhizobia to increase nitrogen fixation in legume plants (particularly alfalfa and soybeans).

The major items of equipment required for the Bioprocessing Resource Center include microbial fermenters for scale-up of fermentation and production (three units with interchangeable 1.5 and 5-liter flasks, two 15-

liter systems, an 80-liter system, and a 500-liter system), tissue culture bioreactors for plant and mammalian cells (three 1.5 liter systems, two 15-liter systems, and a 60-liter airlift bioreactor), and a flexible system for product separation and purification. Planners have suggested that the Bioprocessing Center also should offer the following service units to improve the speed and quality of research: a centralized hybridoma facility; a chemistry consultation center with expertise and equipment to purify, synthesize, and sequence proteins and DNA; a biocomputing center; a cell-sorting facility; a mass spectrometry facility; an NMR facility; and an electron microscopy facility.

Expected funding sources include state funds, industrial research contracts, and peer-reviewed grants and contracts, as well as funds from the federal government.

Oregon. Funding for the Oregon component of the interstate partnership will be invested in the Oregon Plant Biotechnology and Bioprocess Technology Initiative.

Natural resources are the heart of Oregon's economy. Agriculture and forestry contribute over $5 billion annually to Oregon's economy. With population growth pressing the limits of natural resource production areas and with global demand for Oregon products, Oregon must not only diversify its economy, it must find ways to diversify the fibers, fruits, and grains that make up its natural resource base.

Three Oregon research universities have notable strengths in plant biotechnology. Oregon State University has the largest program, focused around the Center for Gene Research and Biotechnology. The Oregon Institute for Science and Technology's concentration is in the area of bioprocessing, including biomass conversion.

The University of Oregon's strength lies in the area of plant molecular biology, including plant gene structure and regulation.

The three research institutions will coordinate their efforts on behalf of Oregon's natural resource base with the Governor's Science Council and agriculture/natural resource industry representatives through the Plant Biotechnology and Bioprocess Technology Initiative.

Among the research targets of particular relevance to Oregon's natural resource base are:

- Development of efficient means to directly transfer genes into economically important crops and trees to increase disease resistance; increase herbicide resistance; improve nutritional, medicinal and flavor value; and increase resistance to defoliating insects.

- Development of expertise in general fermentation and applied biochemistry together with Oregon's access to the Massachusetts Bioprocessing Resource Center, to create an Oregon capacity for large scale culture of biological products--an essential component to any long-term, high volume biotechnology industry and the products of that industry, including drugs, industrial catalysts, pesticides and structural materials.

- Expansion and application of immunological research to develop vaccines for fish, domestic animals, and humans; new diagnostic tests for animals; animal and plant breeding; and tree development.

- Development of new methods for converting agricultural residues and forest wastes into fuel, chemical and food products.

- Development of new applications of microbial degradation to toxic compounds in the soil and groundwater.

CONCLUSION

Oregon and Massachusetts are confident that this proposal reflects opportunities for a productive partnership. The immediate result will be a project of value to each of the partners in enhancing their efforts in the area of biotechnology. In the long term, the partnership will provide a national model for cooperation, sharing of experience, transfer of information, and development of technology networks across state boundaries.

OREGON/MASSACHUSETTS BIOTECHNOLOGY PARTNERSHIP

STATEMENT OF ROGER J. BASSETT, DIRECTOR, GOVERNOR'S OFFICE OF EDUCATIONAL POLICY AND PLANNING

Chairman Burdick and members of the Subcommittee, I am appearing today to provide testimony on behalf of the Oregon/Massachusetts Biotechnology Partnership.

INTRODUCTION

The Commonwealth of Massachusetts and the State of Oregon have laid the foundations for a model interstate partnership in the field of biotechnology. This unique effort will build upon the respective strengths of the two states to enhance the development of the biotechnology industry nationwide. The partnership will focus on two main areas: the application of recombinant DNA technology to plant sciences and the development of strategies to improve the efficiency of small and medium-sized biotechnology companies, especially through shared facilities.

Both Oregon and Massachusetts have research centers with worldwide reputations. Oregon's three research institutions with programs in the plant sciences, Oregon State University, the University of Oregon, and the Oregon Graduate Institute for Science and Technology, recently have joined forces to pursue cooperative efforts in molecular plant engineering and bioprocessing. These programs, combined with Oregon's abundant supply of natural resources and natural resource industries, provide a strong base for the application of biotechnology to agriculture, forestry, and the food industries. To build on this base, Oregon needs to develop regular mechanisms for taking the products of innovation to the marketplace. Massachusetts, through the public/private consortium known as the Massachusetts Biotechnology Research Institute (MBRI), has a highly successful record in this area. The MBRI continues to evolve new strategies for nurturing biotechnology companies at the earliest stages of development.

PROPOSAL

Purpose. In this proposal, the Oregon/Massachusetts Biotechnology Partnership is seeking federal support for the second year of a five-year research and development program.

The overall goals of the program and the partnership are:

- **To expand basic and applied research in plant genetic engineering and bioprocessing;**
- **To enhance the commercial exploitation of innovations in biotechnology; and**
- **To foster education and training programs to support the development of diverse biotechnology industries.**

The expected outcome is a working partnership serving essential research and economic development needs for the Northeast and Northwest regions of the United States and as a model for other multi-regional efforts to respond to the biotechnology initiatives of our major international competitors.

Results of the First Year. Grant funds provided to the Partnership in the first year of the partnership are being used to accomplish the following joint tasks:

- Establish effective working relationships between key organizations and individuals in the two states;
- Complete detailed inventories of biotechnology resources and needs in Oregon and Massachusetts to identify potential areas of collaboration;
- Support faculty research productivity in biotechnology;
- Plan a series of conferences addressing specific topics in biotechnology that will promote the transfer of knowledge and experience from one state to the other; and
- Carry out the first conference in the series, "Opportunities in Plant Molecular Biology: Plant Productivity, Plant Stress, and Biomass Conversion/Biodegradation."
- The Massachusetts portion will help support the development of college-level education and training programs conducted through the MBRI Innovation Center and the implementation of an industry-focused Bioprocessing Resource Center.
- In Oregon, the funds will be used to begin focusing faculty research and educational efforts in basic plant molecular biology and bioconversion on the natural resource development and diversification interests of the Northwest and New England regions of the United States.

Funding for the Second Year. Massachusetts and Oregon have committed a total of $5 million for biotechnology research and development projects to be carried out under the umbrella of the partnership during the second year. Because of the national importance of this effort, the two states are seeking an equal $5 million level of funding from the U.S. Department of Agriculture.

An additional $5 million in federal funding for the partnership (matched by Partnership expenditures) will be sought in each of the next three years.

The partners anticipate that at the end of the fifth year, the partnership will be self-sustaining through a combination of state support, industrial research contracts and peer-reviewed grants and contracts.

Administration. Overall responsibility for governing the partnership rests with an Oregon/Massachusetts Biotechnology Partnership Steering Committee. The Steering Committee will have an equal number of members from each state and will appoint appropriate advisory committees to deal with each of the three partnership goals, thereby ensuring participation of key groups and institutions in both states.

Operational responsibility for activities of the Partnership rests with the staffs of the MCEC and the Oregon Science Council. Direct management of specific projects and tasks will be the responsibility of each partner in a manner consistent with its intergovernmental, industry, and academic relationships and within guidelines associated with agreements between the Cooperative State Research Service and Oregon State University's Agricultural Experiment Station.

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Funds for the interstate partnership will be held by Oregon State University's Agricultural Experiment Station. The funds will be distributed by the University to participating institutions in both states as sub-contracts for approved activities. All federal grant reporting requirements will be met by the University.

DESCRIPTION OF ACTIVITIES

Massachusetts. Funding for the Massachusetts component of the interstate partnership will be used primarily for the nonprofit elements of the Massachusetts Bioprocessing Research Institute Innovation Center, including the pilot Bioprocessing Resource Center and the versatile conference and educational facility. These will occupy 12,000 square feet of Biotech III in the Massachusetts Biotechnology Research Park.

The Massachusetts experience indicates that areas with a rapidly growing biotechnology industry--including small and medium-sized companies with limited resources--require some form of shared bioprocessing facility. Such facilities must provide equipment and specialized services in an industry-tailored, proprietary-controlled environment. There also is an enormous need for personnel trained in biotechnology manufacturing operations. Because of the lack of equipment and facilities at the university level, many graduates entering industry possess theoretical understanding of bioprocessing but lack practical, hands-on experience.

To meet the needs of businesses and universities in Massachusetts and the New England region, MBRI has begun construction of a Bioprocessing Resource Center Pilot Plant. This plant will be designed to support scale-up of microbial fermentation, tissue culture growth, and product separation and purification. Plant operations will be documented in accordance with Good Manufacturing Practice (GMP) guidelines established the U.S. Food and Drug Administration for the production of human therapeutic products.

Anticipated users of the facility include CBI portfolio companies, such as Alpha-Beta Technology Inc., and EcoScience Laboratories, Inc. In the past, these companies have had to use bioprocessing services as far away as Illinois and Texas. Also, five independent biotechnology firms in Massachusetts have expressed interest in a pilot production plant. One of these firms is the developer of a number of proprietary technologies for agricultural applications of genetic engineering, including the genetic modification of rhizobia to increase nitrogen fixation in legume plants (particularly alfalfa and soybeans).

The major items of equipment required for the Bioprocessing Resource Center include microbial fermenters for scale-up of fermentation and production (three units with interchangeable 1.5 and 5-liter flasks, two 15-liter systems, an 80-liter system, and a 500-liter system), tissue culture bioreactors for plant and mammalian cells (three 1.5 liter systems, two 15-liter systems, and a 60-liter airlift bioreactor), and a flexible system for product separation and purification. Planners have suggested that the Bioprocessing Center also should offer the following service units to improve the speed and quality of research: a centralized hybridoma facility; a chemistry consultation center with expertise and equipment to purify, synthesize, and sequence proteins and DNA; a biocomputing center; a cell-sorting facility; a mass spectrometry facility; an NMR facility; and an electron microscopy facility.

Expected funding sources include state funds, industrial research contracts, and peer-reviewed grants and contracts, as well as funds from the federal government.

Oregon. Funding for the Oregon component of the interstate partnership will be invested in the Oregon Plant Biotechnology and Bioprocess Technology Initiative.

Natural resources are the heart of Oregon's economy. Agriculture and forestry contribute over $5 billion annually to Oregon's economy. With population growth pressing the limits of natural resource production areas and with global demand for Oregon products, Oregon must not only diversify its economy, it must find ways to diversify the fibers, fruits, and grains that make up its natural resource base.

Three Oregon research universities have notable strengths in plant biotechnology. Oregon State University has the largest program, focused around the Center for Gene Research and Biotechnology. The Oregon Institute for Science and Technology's concentration is in the area of bioprocessing, including biomass conversion.

The University of Oregon's strength lies in the area of plant molecular biology, including plant gene structure and regulation.

The three research institutions will coordinate their efforts on behalf of Oregon's natural resource base with the Governor's Science Council and agriculture/natural resource industry representatives through the Plant Biotechnology and Bioprocess Technology Initiative.

Among the research targets of particular relevance to Oregon's natural resource base are:

- Development of efficient means to directly transfer genes into economically important crops and trees to increase disease resistance; increase herbicide resistance; improve nutritional, medicinal and flavor value; and increase resistance to defoliating insects.
- Development of expertise in general fermentation and applied biochemistry which, together with Oregon's access to the Massachusetts Bioprocessing Resource Center, will create an Oregon capacity for large scale culture of biological products--an essential component to any long-term, high volume biotechnology industry. The products of that industry include drugs, industrial catalysts, pesticides and structural materials.
- Expansion and application of immunological research to develop vaccines for fish, domestic animals, and humans; new diagnostic tests for animals; essential reagents for animal care and for crop plant and tree development.
- Development of new methods for converting agricultural residues and forest wastes into fuel, chemical and food products.
- Development of new applications of microbial degradation to toxic compounds in the soil and groundwater.

CONCLUSION

Oregon and Massachusetts are confident that this proposal reflects opportunities for a productive partnership. The immediate result will be a project of value to each of the partners in enhancing their efforts in the area of biotechnology. In the long term, the partnership will provide a national model for cooperation, sharing of experience, transfer of information, and development of technology networks across state boundaries.

We would appreciate your favorable consideration of our request during Subcommittee deliberations on Fiscal Year 1991 appropriations.

Thank you.

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ORGANIZATION FOR THE PROTECTION AND ADVANCEMENT OF SMALL TELEPHONE COMPANIES

STATEMENT OF JOHN N. ROSE

SUMMARY OF REQUESTS

Programs involved:	• Rural Electrification Administration (REA) telephone loan programs
Actions proposed:	• Continue current funding levels for the insured, guaranteed, and Rural Telephone Bank lending programs • Continue capitalization of the Rural Telephone Bank • Continue adequate staffing levels for the provision of REA technical support, standards setting functions, materials approval, and field trials • Continue the prohibition against REA's general funds policy and against provisions regulating the order in which borrowers obtain loan advances.

OPASTCO, the Organization for the Protection and Advancement of Small Telephone Companies, appreciates this opportunity to submit testimony concerning the fiscal year 1991 budget proposed for the Rural Electrification Administration.

OPASTCO is a national association representing more than 420 small telephone companies and cooperatives that serve less than 50,000 customers. Collectively our members provide telephone service to approximately 1.75 million subscribers in 40 states in rural America. Of our members, 70 percent are REA or RTB borrowers.

It has been said that the REA program is a program for the people. The customers of our small telephone system members are those people, and they need REA to continue to be there for them now more than ever before. The continuation of a strong REA program is vital to rural America. Loan levels must be maintained for the REA, RTB, and FFB programs and there must be continued capitalization for the Rural Telephone Bank.

Many of our member telephone companies relate stories of the role the REA has played in the development and survival of their companies, both in terms of funding and technical assistance and support.

For instance, Loretto Telephone Company currently has approximately 4,500 access lines serving 4 exchanges in southern middle Tennessee. But when company President Louise Brown and her husband purchased the company in 1946, it had only 124 access lines. Louise operated the switchboard in their home and while her husband served as the outside plant man. The couple went through some rough times, including an ice storm just months after they purchased the company which took every one of their customers out of service.

Seven years later they were scraping along when the REA field representatives first came to call and explain the REA program.

Since that time, Loretto has had 6 REA and 3 RTB loans to help it do everything from replacing old open wire, to converting to touchtone, to installing digital switches, to extending service from those 124 original customers to all parts of Lawrence County, Tennessee. The company currently is applying for an REA loan to convert the rest of its offices to digital switching. Brown emphasizes, "I can honestly say that without REA financing and technical assistance, our company could not have achieved the level of facilities and service quality we have today. REA helped us manage and plan; they were with us every step of the way."

Another company, Cimarron Telephone Company, in Mannford, Oklahoma, currently has 6,400 access lines serving 10 exchanges in northeastern Oklahoma. But back in 1951, the telephone company had only 500 subscribers and was in terrible shape, both in terms of facilities and finances. After being rejected for commercial financing, Cimarron went to REA, and in 1957 the company was approved for the program. Cimarron has had 5 REA loans and 5 RTB loans since that time.

Margaret Goatcher, president of Cimarron Telephone Company, was left to manage the telephone company alone when her husband died in 1961. "I had very little knowledge in areas such as outside plant, but the REA representatives provided me with invaluable guidance and support," says Goatcher.

OPASTCO realizes that some people, including the administration, believe that the REA's job is for the most part complete and that telephone companies serving rural areas are able to obtain financing from private sources. But we strongly disagree. Telephone service is widely available in much of rural America, but that service needs to be continually modernized, and REA financing is necessary.

Having come through the industry changes resulting from divestiture and facing the growth in fiber optics, the advent of signaling system 7, integrated services digital network, and much much more, our small company members believe many of the largest and hardest jobs still lie ahead. OPASTCO sees a greater need for REA and its programs than ever before.

The industry has entered a time when advanced services beyond basic voice service are becoming an expected and needed part of customers' telecommunications service. To bring the information age to rural America -- including fiber optics, advanced signaling networks and the services these technologies will provide-- telephone companies serving rural areas must continue to receive and make efficient use of REA funds.

Without continued REA support as technology and new services develop, we will likely see a widening gap between rural and urban telecommunications services and the development of what many have referred to as information services "haves" and "have nots." Also, without the credit assistance provided by REA, the rates paid by rural subscribers would increase significantly.

But the implications of needing information services extend beyond the current population in rural areas -- telecommunications plays a crucial role in rural development, an issue which is of great importance to all of us today. Rural America needs more job opportunities and economic growth, and telecommunications is an integral component of such development. To keep its citizens, rural America must have jobs, and to attract businesses, rural America must have the telecommunications services these businesses desire. And this should be an issue of concern not only to rural representatives but to urban congressmen as well, for unless the

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rural areas can attract and keep people and businesses, the highways and other urban infrastructure components will continue to be pushed to their limits.

Many REA borrowers have taken a role in economic development as local business leaders. But without REA funding support, many local telephone companies will not be able to make their most important contribution to rural economic development--that is, modern telecommunications services.

Sufficient funding must be maintained not only for the REA lending programs but also for adequate staffing of the agency. The number of REA staff years has dropped significantly in recent years, and this continued decrease reduces the services REA provides to rural Americans through its borrower telephone companies.

The services REA provides in addition to funding, such as establishing standards, conducting field trials, and approving materials, are essential to small telephone companies. Already there has been a decline in support in recent years, and this shortage will be even more detrimental in the months and years ahead as new technology, such as signaling system 7, continues to develop and bring new services and applications.

In the 1960s, REA led in adapting technology to the rural environment, saving money and improving service. If small companies today are to provide the services which customers want and which could foster economic development in rural areas, they must have expertise in the new technologies and know how to employ them efficiently. REA support is needed to meet this end.

In addition to the proposed cuts in funding levels and decreases in staff and support services, OPASTCO also is concerned about several other administration plans for REA.

The one percent loan origination fee, which would increase to 3 percent by 1995, is an unnecessary burden for borrowers. The REA states that this additional charge is to be deposited in the revolving fund and used to offset administrative and default costs. Such a provision would increase rural subscribers' rates and is particularly questionable because, to our knowledge, there never has been a default on a telephone loan.

The administration also proposes to significantly increase the RTB interest rate, and this too would increase borrowers' costs of providing service and in turn increase local rates.

Additionally, the administration seeks to reinstate its general funds policy and to regulate the order in which borrowers with more than one loan draw down their funds. Such provisions are unnecessary impediments to loan approvals and advances and should not be permitted.

REA is one of the great achievements of our government; it is an excellent program which continues to serve rural America well. It is not a grant program -- the loans are paid back in full -- and the yearly net outlay by the government is insignificant.

The citizens of rural America need the REA program. OPASTCO urges the subcommittee to reject the administration's proposals and to maintain current lending levels for a healthy REA program. We appreciate the subcommittee's past efforts in support of REA and look forward to working with you to create a strong future for REA.

STATEMENT OF ORGANIZATIONS CONCERNED ABOUT RURAL EDUCATION

Organizations Concerned about Rural Education (OCRE)* is a national coalition of educational and rural organizations working to promote policies and programs which will benefit rural schools and communities. Member organizations are combining their resources to develop successful strategies for improving education and the quality of life in rural communities.

The first effort of the coalition is to establish a pilot program, the Rural School and Community Development Project, in North Dakota. The coalition believes that the North Dakota project will then serve as a model which can be adapted to fit the needs of rural areas in other parts of the country.

North Dakota is uniquely qualified as a state in which to develop such a program. The history of North Dakota is the struggle of the people of the state against economic exploitation by outside interests. As a consequence, its people have developed an independent, self-motivated spirit.

Like other rural regions which produce raw materials, North Dakota cannot control either the markets in which it sells or in which it buys. With 85 percent of the state's gross income coming from agriculture and energy production, diversification is the key to reducing the state's economic dependence.

Current economic and social changes have caused severe financial stress in rural communities in North Dakota, as they have elsewhere in the Middle West. The state has also suffered the effects of a major three-year drought and the population is declining.

Over the years, North Dakota's rural communities have experienced a drain of resources, both human and financial, as dollars and people have migrated to larger urban centers or out of the state. It is estimated that 60 to 75 percent of the graduates of the University of North Dakota and North Dakota State University leave the state. Thus, North Dakota is losing some of its best educated and potentially entrepreneurial people at a time when they are most needed.

New job opportunities are needed to encourage these people to stay in the state. Changes are also needed in educational programs so that students can acquire the skills needed to create jobs. The most promising opportunities would seem to be those which add to the value of present commodities and services. The North Dakota economy is small enough to enable it to respond to new opportunities, and to gain substantial benefit from relatively modest efforts.

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* See attachment A

The rural school, the only public institution which serves every rural community, holds the most promise for developing programs to reverse this economic decline. Often, the school is the largest local enterprise and sometimes the community's only remaining social service provider. However, there may be only one or two students in each school eligible or asking for the kind of program which will foster job creation and economic development.

The coalition, through the Rural School and Community Development Project, is encouraging the creation of alliances between North Dakota's rural communities. Their purpose is to utilize schools as centers of a new kind of education.

Educational programs which meet community needs are now in place in the larger North Dakota cities, but rural schools are at present unable to provide similar education. By pooling the resources of several school districts, "clusters" of schools can offer the same kinds of programs in rural areas. School clusters can make efficient use of specialized personnel, and current communications and information technology. They can include adults as participants and expand their education programs to serve the broader community.

North Dakota agencies are beginning to identify appropriate "clusters" of schools and to work with local school boards within the "cluster" area to determine their greatest needs.

It is the coalition's conviction that clustering will foster more equitable access to education and training and offer a better learning experience. Course offerings can be expanded and more students can be exposed to master teachers. Specialists can be shared by bringing students to them or by using modern communication technology, thus improving curriculum and the quality of instruction.

In addition, the Rural School and Community Development Project can give rural schools a central role in the creation of employment opportunities. Schools can help slow migration to urban centers or out of state by giving students the skills to create jobs as well as to find jobs.

An important aspect of this project is to encourage schools to return to the rural tradition of "learning by doing." The most effective learning is that which comes from doing real work. Schools must find ways to build into their education the kinds of programs which teach the entrepreneurial skills people need. Schools can then become business incubators by providing technical training and support for fledgling enterprizes. This new education would include courses on financial and business planning, conducting and using market surveys, multiple uses of computers, marketing products and services, business management, and others.

The coalition envisions schools taking the lead in creating institutions that are more human and more flexible. Earning a high school diploma may take more or less than 12 years. Education can be job related or life enriching for adults and young people. If adults have instructional options in the traditional school setting, schools will become community learning centers.

North Dakota's state agencies and community organizations are ready to implement the Rural School and Community Development Project. Over 25 representatives from interested groups have attended state planning meetings chaired by N. D. Superintendent of Schools Wayne Sanstead. Governor George Sinner endorsed the program in his annual State of the State address in January. The N. D. Department of Public Instruction is working with the N. D. State University Extension Service to provide the technical assistance such a program demands.

State agencies and organizations, in addition to the Department of Public Instruction and the Extension Service, which have participated in the planning program include the North Dakota Association of School Administrators, the N. D. Board of Vocational Education, the N. D. Board of Higher Education, the North Dakota Education Association, and the North Dakota Federation of Teachers. Mid-continent Regional Educational Laboratory (McREL) which serves North Dakota and neighboring states is providing important assistance.

The coalition plans to bring the North Dakota business community, farm, cooperative, and labor groups, and the religious community into the process. These groups can offer their knowledge of community needs, provide leadership, and give the encouragement and support which will be necessary for success.

The Rural School and Community Development Project will improve educational opportunities for all North Dakota citizens, and develop a system of integrated human service delivery. It will strengthen the economic base of the state through diversification of the economy, and will slow the human resource drain caused by the out-migration of young people.

It has the potential to change the way rural schools operate, to give students and adults the necessary skills and support which will enable them to remain or return to the rural community. It will foster a climate in which new small entrepreneurs can create a growing number of new job opportunities. Schools will become a more substantial contributor to the quality of rural living, and less of a drain on community resources.

Each of the agencies and groups participating in the national coalition, Organizations Concerned About Rural Education, is offering their individual technical expertise to assist this project. This includes the use of consultants and planning materials as the program develops. In addition, funds are needed to hire necessary on-site support staff, to fund planning grants for community clusters, operational grants for selected long-term projects, and the costs of meetings, consultants, documentation and other technical assistance.

The coalition asks that an appropriation of $1 million be funded through the North Dakota State University Extension Service. Such funding would forge a new relationship between elementary and secondary education and the Extension Service. It would also enable the participants in this project to demonstrate an idea that can be used throughout the country.

The Administration's budget request of $10 million for a "Youth at Risk Program" is a potential source of funds for this demonstration project.

Attachment A

ORGANIZATIONS CONCERNED ABOUT RURAL EDUCATION

Member Organizations

American Association of School Administrators

American Association of Educational Service Agencies

American Federation of Teachers

Council for Educational Development and Research

National Association of Elementary School Principals

National Education Association

National Rural Education Association

National School Boards Association

The Triangle Coalition for Science, Mathematics, and Technology Education

Cooperating Agencies

U. S. Department of Agriculture

U. S. Department of Education, Division of National Programs

Federal Interagency Commission on Education

STATEMENT OF HON. CLAIBORNE PELL, U.S. SENATOR FROM RHODE ISLAND

Mr. Chairman, thank you for this opportunity to testify in support of two existing initiatives at the University of Rhode Island: the construction of a building to house the Costal Institute on Narragansett Bay; and, the establishment of an International Trade Development for Aquatic Products.

As you know, I also have arranged for you to receive testimony on these topics directly from URI's experts.

Last year I requested and received $30,000 for a feasibility study of a new building to be located on the Main Campus of the University of Rhode Island. The study has been carried out and a report is forthcoming. The proposed building will be part of the new Coastal Institute on Narragansett Bay at the University of Rhode Island.

The Coastal Institute on Narragansett Bay at the University of Rhode Island is an exciting opportunity for the nation. Three decades of state and federal investment have created an unequalled capacity to do research, to teach, and to carry out public education in coastal marine and land related subjects.

We now have the opportunity to build on these decades of accomplishment by providing facilities for the scientists and their important work at the Coastal Institute on Narragansett Bay.

The Coastal Institute scientists will study our coastal ecosystems. They will research and teach about the relationship between land based and water based production. They also will look for systems to assure continuous productivity of the coastal land and water.

A significant quantity of prime agricultural land lies within coastal systems and our coastal bays and estuaries are among the most productive in the world. The coastal land and waters must be wisely managed for the benefit of all the citizens, not only of Rhode Island, but of the nation.

While the Coastal Institute on Narragansett Bay will look to Rhode Island's coast and to Narragansett Bay as important study areas, the scientists of the Institute will have much broader interests.

Rhode Island, because of its location and current state of development, and the presence of the Gulf Stream close to shore, contains an amazing amount of diversity of both its land and water coastal resources. This allows Rhode Island to be a laboratory for the study of issues and problems in coastal resource use and management of concern across the nation.

The Coastal Institute on Narragansett Bay will study and evaluate environmental disasters such as the World Prodigy and the Exxon Valdez oil spills. Scientists from URI are playing important roles in measuring the impact of these tragic events. The Coastal Institute will provide continuous study on the ecosystems which are affected by such unfortunate occurrences.

Scientists at the Institute will consider production activities in the coastal zone such as irrigated agriculture, and fresh water and marine aquaculture.

In the recent past, URI scientists have had cooperative research projects with scientists in other states ranging from the study of drainage problems and water recirculation in the San

Joaquin Valley of California to coastal resource use and management on the Chesapeake and San Francisco bays. The Coastal Institute will investigate coastal resource use systems which recognize the interests of all the users of our coastal zones from aquaculturists to tourists and recreational boaters.

The Coastal Institute on Narragansett Bay is not just another institute at a small land grant university in a small state. It is the fruition of years of the pursuit of excellence in coastal and marine studies at the University of Rhode Island.

The URI Graduate School of Oceanography and the various academic department of the College of Resource Development have world wide recognition in their chosen areas of specialization. Their scientists are active around the world including with the USAID coastal projects in Thailand, Equador and Sri Lanka.

The Coastal Institute on Narragansett Bay will be housed in two separate buildings, one on the Bay Campus to be built by the State of Rhode Island, and the other on the Main Campus, for which I am requesting your support.

The total cost of the proposed building, to be constructed in three stages, is 19.194 million dollars. I am requesting 1.972 million dollars for architectural and engineering studies and 5.741 million dollars for first phase construction of the 1990-91 fiscal year.

The proposed building, primarily for the College of Resource Development, will house the Department of Fisheries, Animal and Veterinary Science, the Department of Natural Resources Science, and the Department of Resource Economics, and the Coastal Resources Center.

Also, renovation will be carried out on aquaculture facilities located within a mile from the main campus.

By the turn of this century, over two-thirds of the world's population will live within fifty miles of a coastline. This is a particularly rich land and water resource area which supports important agricultural and fisheries production systems. The understanding and wise management of these coastal ecosystems is important to all of us.

In a related matter, I am renewing my request for a federal match of 1.95 million dollars in support of an International Trade Development Center for Aquatic Products.

In 1988 the national trade deficit in aquatic products was approximately 6.6 billion dollars, which was about 5 percent of our total national trade deficit. Our trade deficit in that year in aquatic products offset nearly 50 percent of our total agricultural trade surplus.

Our industry, made up of relatively small independently managed processing and marketing firms, is facing difficult competition from large Asian and European vertically integrated trading giants supported by their respective governments.

There are substantial trading opportunities for U.S. firms to open new markets, and to expand opportunities in traditional ones. There are opportunities for value-added products, for developing both marine and freshwater aquaculture, and for exporting currently underutilized species available from our coastal waters.

The proposed Trade Center will assist industry by providing a central source of data on U.S. and foreign markets, by exploring value-added opportunities, by providing information and analysis of barriers to trade, and by extending results within the state, the region, and across the country.

Aquatic products marketing and trade is a complex business. For example, no other meat source has such a wide variety of forms and products than seafood. Yet, no other major industry receives so little support in competing in a very complex international market.

Scientists at the International Trade Center for Aquatic Products at the University of Rhode Island will be linked with researchers in other states, including the Gulf Coast and the Pacific Northwest. The Trade Center would expand on this network to include scientists around the world. These types of contacts would be useful for product development and for aquaculturists.

The International Trade Development Center for Aquatic Products, if funded, would be located in the proposed Main Campus building of the Coastal Institute on Narragansett Bay, and would be included in the Institute's activities. The new building would provide space for exhibits and for meeting with industry.

If you need any additional information about these worthy projects, either the Trade Center or the Coastal Institute building, I stand ready to provide it. Thank you again for this opportunity to present my strong endorsement for both projects.

PENNSYLVANIA DEPARTMENT OF AGRICULTURE

STATEMENT OF LARRY ELWORTH, PROGRAM COORDINATOR, PENNSYLVANIA APPLE MARKETING PROGRAM

*** Environmental concerns, in addition to perennial economic considerations, are exerting increasing pressure on apple growers and other producers to make significant changes in their agricultural practices.

*** Among the available responses to these concerns, are Integrated Pest Management (IPM) methods which have proven to be of great value in improving producer welfare and reducing environmental impacts in the production of apples and other crops.

*** Although the benefits of adopting IPM are substantial, the demands on producers to master new skills and handle large amounts of sophisticated information have limited the extent to which IPM methods have been utilized.

*** For the agricultural research and extension system to serve the needs of producers, it needs to place a high priority on providing technology transfer and education programs, in addition to basic research.

*** In funding these programs, it is strongly suggested that Congress make sure that Regional IPM Research Programs, as well as other USDA programs, are appropriately funded and that adequate extension personnel are dedicated to implementing effective IPM education efforts.

My name is Larry Elworth. I am Program Coordinator for the Pennsylvania Apple Marketing Board which represents the commercial apple growers in Pennsylvania. My interest in having the opportunity to submit testimony is to describe some of the things that growers in our state and across the country need from the research and extension system. In light of the way in which food safety concerns have permanently changed the landscape in which we grow and market our crops, these needs have a heightened importance.

For those of us in the apple industry, the food safety controversy raised by the issue of Alar on apples has had a significant impact on our livelihoods and on the way we do business. We have, quite frankly, found ourselves on the cutting edge of the entire food safety debate. Because of that position, we have realized that we must redouble our efforts to produce apples in an economically and environmentally sound manner.

Apple growers and other producers find that, in addition to the daily problems of just trying to raise a crop, they must respond to pressures which originate outside of their farms if they want to stay in business. In the apple industry we have responded to these pressures through the use of Integrated Pest Management or IPM methods. These

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growing methods have a proven track record in our industry of improving producer welfare and reducing the environmental impact of agricultural production. However, if we are to make the changes being demanded of us by the economy and society at large, we must look to Congress to provide further resources for IPM programs, particularly in the areas of applied agricultural research, education, and technology transfer.

Integrated Pest Management in apples and other crops, as described in the Annual Review of Entomology, is a systematic approach to crop protection that uses increased information and improved decision-making paradigms. The results of IPM utilization allow producers to reduce their use of purchased inputs, such as pesticides, and to improve the quality of their pest control strategies. Just as important, this reduced use of pesticides, through field monitoring, and the use of biological and cultural controls, allows producers to minimize the environmental effects of their production methods.

Let me describe a concrete example of how Integrated Pest Management works:

In apple orchards throughout Pennsylvania and the rest of the country, European red mites can severely damage the vigor of trees. By literally sucking the chlorophyll from the leaves of the trees, red mites can seriously affect the health of an orchard. Pesticides have provided control but they are disruptive and expensive. Also red mites have a remarkable ability to develop resistance to miticides in a very short period of time.

In response to this pest problem, entomologists studied the natural history of red mites and discovered a tiny ladybird beetle, which is the size of the head of a pin, that eats dozens of red mites a day. Based on that research, an information-based monitoring system was put together. Using that system, a grower in Pennsylvania can walk into his orchard during the growing season, count the number of red mites and predatory ladybird beetles present, and make a simple decision whether or not to spray.

In many cases, careful attention to the health of these and other predators has dramatically reduced or eliminated the need for chemical control measures. During the nearly eighteen years in which we have used this one IPM technique, Penn State researchers estimate that we have saved at least 1.4 million pounds of miticides. That translates, in Pennsylvania alone, into $14 million dollars of savings to growers. Those savings also amount to 1.4 million pounds of pesticides which never made their way into the environment or onto the food that consumers bought.

This is a single example of how effectively IPM programs work in apple orchards. There are countless other examples of insects and diseases for which IPM has produced similar benefits to growers through better, more cost-effective pest control and to the environment through a minimal use of pesticides. However, even though there are demonstrable benefits to be derived from the use of

Integrated Pest Management methods, they are still not fully used by all apple growers.

Part of the reason for this lack of full IPM use is that the methods involve gathering and utilizing a fairly large amount of information. Even so, there is more to making use of IPM than just gathering information. Collecting that information often demands skill in insect and disease identification and sampling procedures. In addition, utilizing that information means interpreting and analyzing data, often by using computer technology. In short, growers are faced with learning a whole new set of skills beyond those of just growing their crops.

For growers to adopt information-based methods, such as Integrated Pest Management, agricultural research and extension efforts need to pay a great deal of attention to how these methods are actually put into growers' hands. This is especially true given that these methods involve mastering new technical skills as well as new sets of information. Unfortunately the present demands on extension personnel do not provide sufficient opportunities or resources to comprehensively address the challenges for implementing these new methods. In many instances, individual extension agents may not have the background or training to make these new skills and information available to growers. Extension specialists often lack the support staff to adequately conduct applied research projects, much less the resources to design appropriate educational materials or develop and implement technology transfer programs.

Basic research will continue to have an important role in developing dynamic IPM programs. But in order to increase the accessibility and adoption of IPM, we need full and appropriate funding of applied research and practical grower education programs. Some of the most effective work in this regard is done through Regional IPM Research programs, which are woefully underfunded. This work needs to be funded in addition to other deserving programs being proposed within ARS or USDA.

Another specific need is to have extension staff exclusively devoted to IPM education, with direct links to University staff, who can spend the time to teach growers the skills and methods necessary to implement innovative growing practices. While providing or mandating training for present extension staff may have some justification, the current demands on their time would not necessarily allow them adequate opportunities to carry out additional educational efforts in IPM. These extension people would have appropriate interdisciplinary skills and would have the time and resources to develop educational programs for growers and other extension personnel.

At the heart of the matter is the simple fact that just adding money to the agricultural research and extension budget will not, by itself, provide growers with the means to make the changes demanded of them. For that reason, it is essential that the vertical integration of research and technology transfer be a high priority. We look to Congress to provide direction for funding so that an emphasis will be put on making practical technology available to producers through solid education and technology transfer efforts.

In the fifteen short years since I started in fruit-growing, the environment in which we farm has changed dramatically. Back when I started managing an orchard, a grower could pretty well make a living if he could just manage what went on within the boundaries of his orchard. Today forces external to the boundaries of our orchards have as great an effect on whether a grower stays in business as anything that happens on the farm.

Perhaps more than any other group in agriculture, apple growers are aware of the changes in our business environment and we are working to make changes in our growing practices. We have already adopted proven Integrated Pest Management techniques to meet the economic and consumer demands we face. What remains is for us to make sure that every grower has the ability to use the technology available to us and to explore further research options for expanding the flexibility and effectiveness of that technology to all areas of agricultural production.

To do that job, we must look to Congress to provide the appropriate resources so that the agricultural research and extension community can fulfill its mandate to put the best and most appropriate tools in growers' hands. In providing those resources, we strongly urge Congress to put a high premium on programs that have a direct application to the pressing needs of growers. If Congress will direct resources and programs in that way, apple producers and other farmers are more than willing to do the rest.

PENNSYLVANIA STATE UNIVERSITY

STATEMENT OF DR. LAMARTINE F. HOOD, DEAN, COLLEGE OF AGRICULTURE

Research on agriculture, food and the environment is in need of a significant infusion of new funds to address shifting problems and challenges in our food and fiber system. Increasingly, the need to apply science and technology to the environmental and food safety aspects of agricultural production while protecting and enhancing our global competitiveness require that we invest in superior research. The National Initiative for Research on Agriculture, Food and Environment provides an excellent opportunity to make that investment without degrading the essential foundations of the agricultural research and education system.

Rapid progress on the problems of water quality, chemical residues, animal productivity, food safety and other areas demands a significant research effort that must be both interdisciplinary and opportunistic. Supported by the existing infrastructure, this initiative will provide a more rational balance of base and competitive resources. Increasing the competitive proportion of available funding from 3 percent to 30 percent and making it available to the entire research system will target the best opportunities with the best scientific talent available. Agricultural research using the sciences of microbiology, chemistry, chemical engineering, marketing and molecular biology must evolve into an integrating force, expanding those sciences and linking them with existing agricultural problem-solving. If production agriculture is to continue to adapt towards a market-oriented system, this scientific evolution must move ahead.

In context, both the unforeseen democratic revolution in eastern Europe and the rapid consolidation of the European Economic Community accentuate the need to act now. Rapidly changing markets in Europe and the Pacific Rim, fiercely sought by highly productive agricultural competitors, will dominate the foreseeable future. The United States must prepare to compete for these markets with products and commodities of superior quality.

We must add value to our raw products and we must be increasingly aware of the environmental aspects of our production system and

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our consumers' concerns. The future competitiveness of American agriculture depends on our actions.

President Bush has recognized the need for significant new resources for food and agricultural research and has recommended additional funding in four of the six initiative areas. This is most welcome given current budget restraints. Nonetheless, it overlooks the additional opportunities available in market, trade and policy research and in new products, processes and value-added research. I urge you to add funding for these areas to the President's request.

In Pennsylvania, agriculture has avoided some of the difficulties of the last ten years by virtue of diversity and an intense commitment to markets and products. Pennsylvania agriculture has begun the transition from a commodity based industry to a more independent, consumer-driven system. Similar transitions are underway across the nation. The National Initiative, funded at the $150 million level recommended by the Coalition for Advancement of Research on Agriculture, Food and Environment, is a critical step in providing the knowledge our agriculture will need to further this transition. In addition, it is essential that these funds be added without reducing the base funds that provide the continuing foundation necessary to integrate and capitalize on this new research.

Strengthening the research effort while reducing the development and delivery system would weaken the impact of the initiative. Bold action will be necessary to fund the integrated research needed to support an evolving agriculture both in Pennsylvania and in other states. I strongly recommend that you take bold action and fund this initiative at the $150 million level in FY 1991.

PHARMACEUTICAL MANUFACTURERS ASSOCIATION

STATEMENT OF GERALD J. MOSSINGHOFF, PRESIDENT

Mr. Chairman and Members of the Subcommittee:

I am Gerald J. Mossinghoff, President of the Pharmaceutical Manufacturers Association. PMA represents more than 100 research-based pharmaceutical companies that discover, develop and produce most of the prescription medicines used in the United States. I appreciate this opportunity to appear before the Subcommittee and testify on the Administration's Fiscal Year 1991 appropriations for the Food and Drug Administration.

Prompt approval by the FDA of New Drug Applications is absolutely essential to the health of the American people and to the continued ability of the pharmaceutical industry to discover and develop new medicines. Therefore, we strongly support appropriation of the full sums necessary to carry out the programs outlined in the President's budget ($685 million), together with an additional $45 million to address acute resource needs of the Agency. At the same time, we urge the Subcommittee to reject the Administration proposal to offset appropriations by imposing $157 million in user fees -- a proposal that would result in a tax on innovation without corresponding benefit.

FDA is a vital national resource, but the central, incontestable fact today is that this agency simply does not have the resources to do the jobs expected by the American people and mandated by Congress, not only in the Federal Food, Drug, and Cosmetic Act, but under some 23 new laws passed by Congress just in the last decade.

In a September 1989 study, the General Accounting Office sharply defined the critical problems of inadequate facilities, scientific equipment, and staff resources confronting FDA. They are:

o A number of FDA's laboratories fail to meet acceptable standards.

o 29 percent of FDA's scientific equipment, which originally cost over $80 million, should have been replaced.

o The space occupied by FDA staff is far below the amount prescribed by General Services Administration standards.

o The high vacancy rate in Senior Executive Service positions has resulted in serious delays in the review of health products. The professional staffing shortfall can become even more critical at FDA within a few years, when three-fourths of the senior staff will be eligible to retire.

o Over the past decade, there has been a major decline in general staff resources, while the Agency's funding level, in constant dollars, remained practically unchanged.

Additional problems recently reported by FDA include the following:

o The substantial diversion of staff resources from ongoing essential operations to handle emergencies or respond to new urgent priorities has become a serious problem at FDA.

o Major developments in biotechnology promising new products for the treatment, diagnosis, and prevention of many diseases have confronted FDA with the necessity of establishing entirely new scientific analysis capabilities with trained staff and laboratory resources.

These facts clearly demonstrate that FDA confronts an urgent requirement for substantially increased appropriations right now beyond the Administration's budget request.

As a first step, we urge full restoration by Congress of $157 million in appropriations for FDA in lieu of the user fee receipts proposed by the Administration. We strongly believe that the Administration's plan to meet, through user-fee receipts, one-fourth of the budget of FDA -- an agency which is of such vital importance to the health and safety of all the American people -- is completely unrealistic and unjustifiable, and constitutes fundamentally bad public policy.

From a practical standpoint, it is unrealistic to assume that $157 million in user fees could be collected in the next fiscal year. No consideration is given to the prerequisite of special authorizing legislation, recognized by the Administration in its budget request. Congress did not act on similar legislative proposals submitted by the Administration in 1987 and 1989. Without this statutory authorization, the user-fee receipts, under current Federal policy, would never be credited to FDA but would be deposited in the general revenue at Treasury.

Second, no justification is provided for the proposed level of user fees. The estimate is not the result of a detailed study, as required under general user charge policy. Instead, what is put forward is alleged to be an estimate of the total costs of the product-review activities for which user fees are proposed to be charged.

Why, then, have the estimates of total user-fee receipts from New Drug Applications risen from $18.9 million in the 1985 regulatory proposal by FDA (50 F.R. 151, August 6, 1985) to a reported $58 million in the Administration's budget proposal for Fiscal Year 1991 -- in the absence of any increase in total annual New Drug Application reviews during this period?

The answer is that the user-fee receipt estimates bear no direct relationship to costs but are primarily an arithmetical contribution to general Government budget deficit reduction targets. These are not user fees -- rather, they are a new tax!

This brings me to our fundamental objection to FDA user fees -- namely, that they are, in fact, a new tax, and they constitute bad public policy.

The FDA product review activities for which this tax would be imposed are not voluntary -- a basic requirement to justify user fees under current Federal policy. Instead, they are required by law for the public benefit. The only private benefit -- the second criterion for allowing user fees to be charged -- that is received by regulated companies in the approval of health products premarketing applications is that they are allowed to remain in business.

Meanwhile, the alleged benefit of a so-called "seal of approval" by FDA on these products is discounted by the reality that the law prohibits any indication of such "approval" in the advertising or labeling of these products. Moreover, FDA approval has not provided a defense, on the whole, from State product-liability laws to a manufacturer based on compliance with Federal Government standards of safety and efficacy.

We also strongly believe that the new tax proposed by the Administration is bad public policy. It is bad pubic policy to have the salaries of government regulators paid for by the regulated industries. This can undermine public confidence in the impartial administration of our food and drug laws. That is precisely a major issue currently confronted by FDA, and it can only be worsened by such a perception of preferential treatment which would follow from such a scheme.

The FDA itself, in a 1983 User Charge Study, concluded that user fees could "entail or lead to appearances of conflict of interest and to an unstable operating environment if FDA's appropriations were reduced and the Agency were made directly dependent upon receipts from the regulated industry."

Moreover, this would be the worst kind of tax because it would be imposed as an extra cost of industry research and development. By imposing an innovation tax on the premarketing review of human drugs, biologics, medical devices and other products for patient care, the Administration's proposal will undercut a priority policy emphasized in the budget on investing for the future. It is in direct conflict with policies and incentives to encourage additional research and development in American industry.

The Administration's proposal places a heavy burden on small high-technology firms that are creating many of today's most exciting developments in medical science as in the field of biotechnology, in which America currently exercises world leadership. High user fees could discourage such firms from pursuing innovative research because they lack the financial resources to pay such fees. It is reported that the review of each new drug under the Administration's proposal would cost between $300,000 and $400,000; the fee for review of a new device application would be about $100,000.

It is clear that most of the substantial revenues from these high user fees would replace appropriated funds with only about one-third of these revenues going for program improvements. This would be true even if the required special authorizing legislation, which I have previously discussed, were to be enacted to permit the crediting of receipts to FDA rather than depositing them in the General Revenue Fund.

By including anticipated but highly uncertain receipts from user fees, the proposed Fiscal Year 1991 budget for FDA is presented as an increase of $98 million over current-year appropriations ($587 million). However, only $53 million would be applied to actual increases or improvements in FDA programs. We are particularly concerned that the research-based pharmaceutical industry, which would be assessed an estimated $58 million in user fees, would see only $2.5 milion channeled to support direct improvements in the new drug evaluation process.

Actually, the Administration is proposing a major budget cut of $59 million, or 10 percent, from current-year appropriations for FDA. This reduction in budget authority would be imposed at a time when new drugs are urgently needed for AIDS, Alzheimer's disease, cancer, stroke, heart disease and many other diseases. It would constitute a major set-back in the midst of dramatic and extensive developments and investments by pharmaceutical companies in the application of biomedical research to conquer these diseases.

Discovering and developing safe and effective new medicines is a long, difficult and expensive process. The research-based pharmaceutical industry will invest $8.2 billion in research and development this year, and that investment has been doubling every five years. The current ratio of U.S. pharmaceutical R&D expenditures to sales and exports --- 16.8 percent -- is believed to be the highest among all industries.

In conclusion, Mr. Chairman, we fully support the increase proposed in the FDA budget for Fiscal Year 1991, but as direct appropriations on the basis of which there can be effective planning. We also believe there is an urgent requirement for an additional $45 million to address basic resource needs that have been too long deferred.

Over the last several years, Congress has responded to the recommendations of this Subcommittee to address FDA's resource requirements by enacting increased appropriations beyond Administration budget requests. Congress also has consistently rejected user-fee proposals for regulatory activities statutorily mandated for the protection and safety of the general public and which already involve major compliance costs for the regulated industries. I urge that this policy be reaffirmed by Congress as it acts on FDA's FY 1991 budget.

Mr. Chairman, that concludes my prepared statement. I will be pleased to answer any questions you or other members of the Subcommittee may have.

PROJECT FOOD, LAND AND PEOPLE

STATEMENT OF DANIEL O. PARKER, VICE CHAIRMAN

REQUEST FOR AN APPROPRIATION
FISCAL YEAR 1991

AMOUNT REQUESTED: $390,000.00

MISSION STATEMENT:

To encourage critical thinking and wise decision-making among student populations through the study of the interdependence of food, land and people, in order to maintain a vital agricultural system essential to a healthy society.

GOALS:

1. To integrate agricultural information into existing K-12 curriculum through activity-based materials.
2. To provide opportunities for teaching critical thinking and problem-solving skills.
3. To create dynamic interdisciplinary instructional materials designed by educators.
4. To include an ongoing evaluation process within each step of Project Food, Land and People.
5. To develop the support of a broad-based partnership from the private and public sectors.
6. To provide educational opportunities that lead to mature and responsible behavior.

WHY PROJECT FOOD, LAND AND PEOPLE:

This project is not designed to replace, or be in competition with, existing educational programs such as the National Agriculture in the Classroom effort, existing soil and water conservation initiatives, or other efforts in education relating to agriculture and natural resources. Project Food, Land and People is being developed to complement and enhance existing efforts, many of which are state-based and not national in scope.

Food, land and people are interdependent. In the 1980s, many forces have challenged American agriculture and education...demographics, urbanization, worldwide production gains, lifestyle changes, farm policy, global competition for markets, specialization, soil erosion, and environmental issues to name several. In a recent report issued by the National Academy of Science's National Research Council (Understanding Agriculture: New Directions for Education, National Academy Press, Washington, D.C., 1988), concerning education about agriculture, it was found that "few systematic educational efforts are made to teach or otherwise develop agricultural literacy in students of any age. Although children are taught something about agriculture, the materials tend to be fragmented, frequently outdated and usually farm-oriented. Most Americans know very little about agriculture, its social and economic significance in the United States, and particularly, its links to human health and environmental quality."

Education about agriculture...how it impacts you...will bring about a more agriculturally literate society. Educators demand current, balanced, relevant, user-friendly, and easily integrated classroom materials. Today, there is no comprehensive curriculum that is national in scope which deals with the complexity and interdependence of our food system.

Project Food, Land and People can help bring together the commercial and education sectors for a better understanding of agriculture and related issues and to meet the challenges of the 1990s and the 21st Century.

CONCEPTUAL FRAMEWORK:

1. Awareness and appreciation of food, land and people. (Survival is dependent upon how well people manage natural resources.)

2. Historical perspectives of food, land and people. (Throughout history society has been dependent upon agriculture.)

3. Agricultural base for food, land and people. (People use plants and animals in a wide variety of ways to obtain food, fiber, shelter, and other products.)

4. Economics of food, land and people. (Agricultural systems meet fundamental human needs and are the foundation of national economies.)

5. Images and attitudes about food, land and people. (People's images, attitudes, and behaviors create the issues and trends affecting agriculture and the environment.)

6. Decisions about food, land and people. (Responsible human decisions are necessary to maintain food and natural resources.)

7. Food, land and people, and the future. (The future quality of human life is dependent upon international cooperation to resolve global problems.)

HISTORY:

In early 1988, a network of over forty agriculture and education-based agencies and organizations came together to address mutual concerns and formulate a plan to reach out to K-12 educators and students. This was a very diverse group of committed professionals, drawing from state departments of agriculture and education, classroom educators, environmental educators, universities, soil conservation agencies, private industry, and various agricultural organizations. In September, 1988, a newly formed Project Food, Land and People National Steering Committee met to move the project ahead.

All agreed with the challenge and opportunity. Educators want current materials reflective of society's changes and a better understanding of the essential interdependence of food, land and people. We can work together for a common cause and use our respective networks to make Project Food, Land and People a reality.

At its March, 1989 meeting, the National Steering Committee contracted for the staff services of Ms. Fran Trujillo on a part-time basis for the first year. As the project expands and funds become available, that staff position will become full-time.

During the past 12 months, the conceptual framework for Project Food, Land and People has been developed and will involve a diverse look at issues important to food, land and people. Writing conferences will be held during 1990 to develop activities and lesson plans following the conceptual framework which will bring together educators from all geographic and socio-economic regions of the country, as well as natural resource specialists, to begin. Each workshop will bring tgether educators, natural resource specialists, and agriculturists from a designated geographic area. The participants will be selected to represent a cross-section of socio-economic and educational levels.

FUNDING:

The National Steering Committee has secured $21,000.00 during 1989 from agencies, businesses, and individuals, some have given hundreds of hours of volunteer time, as well as funds. Members of the National Steering Committee, or the organizations they represent, have covered their expenses to attend the Steering Committee meetings. The ultimate success of the project will rest upon the public sector becoming a partner with significant support.

We are requesting an appropriation of $390,000, to be used during the Federal Fiscal years of 1991 and 1992. These funds will be used primarily for the field testing, evaluation, and printing of the original publication, as well as some of the administrative expense to accomplish those three steps.

The National Steering Committee will continue to secure funds from businesses, foundations, and individuals to cover the expenses of the Steering Committee and much of the staff expense. Enclosed is a detailed calendar year budget for the years 1990 through 1992.

The project will secure funding after 1992 from the sale of the education materials. There will be a modest charge made to cover on-going administration, needed revisions, and a second printing. Any additional funds beyond the income realized from the sale of materials, will be secured from foundation and business grants.

PROJECT FOOD, LAND AND PEOPLE BUDGET

INCOME
(By Calendar Year)

Item	1989 (Actual)	1990 (Budget)	1991	1992
Appropriation		$ 122,000	$ 265,000	
Agencies	$ 15,500	25,200		
Businesses	500	15,000	20,000	$ 30,000
Foundations	3,574	3,000	9,000	25,000
Individuals	874	1,000	1,000	5,000
Sale of Curriculum				100,000
Other	297	-0-	-0-	-0-
Totals	$ 20,745	$ 166,200	$ 295,000	$ 160,000

EXPENSES
(By Calendar Year)

Administration:				
Director	$ 11,481	$ 30,000	$ 40,000	$ 42,000
Secretary	502	15,000	30,000	20,000
Office Expenses	1,550	10,000	12,000	10,000
Printing/Copying	1,343	5,000	99,000	99,000
Staff Travel	1,664	5,000	4,000	3,000
Steering Committee	2,872	8,000	9,000	9,000
Taxes & Fees	102	7,200	11,200	9,920
Materials Purchased	500			
Writing Conferences		35,000		
Editing & Evaluation		5,000	25,000	25,000
Field Testing			25,000	25,000
Totals	$ 20,014	$ 120,200	$ 255,200	$ 242,920

Total Income expected for four years: $641,945
Total Expenses expected for four years: $641,334

PURDUE UNIVERSITY

STATEMENT OF DR. ROBERT L. THOMPSON, DEAN OF AGRICULTURE

Mr. Chairman and Members of the Subcommittee, my name is Robert L. Thompson. I am Dean of Agriculture at Purdue University and serve as a member of the Board on Agriculture of the National Research Council. I want to urge the subcommittee to support the national agricultural, food, and environmental research initiative proposed by the Board on Agriculture and for which start-up funding has been proposed in the President's 1991 budget.

This initiative proposes that the Federal government annually invest $500 million in research grants on agricultural, food, and environmental problems. The Board's decision to recommend an investment of this size was not taken lightly. We all recognize the need to reduce the Federal budget deficit. However, the food, agricultural, and natural resource system faces problems of such magnitude that solutions cannot wait. The federal government spent tens of billions of dollars in short term price and income support for farmers in the mid-1980s. What is proposed in this initiative is a much smaller investment in research to solve problems that will determine the long-term competitiveness and sustainability of U.S. agriculture.

The National Association of State Universities and Land Grant Colleges has recommended funding the USDA competitive grants program at $150 million for 1991. This would provide first year funding of this National Research Initiative at a level sufficient to allow inclusion of all six major program areas proposed by the Board on Agriculture. These areas include: plant systems; animal systems; nutrition, food quality and health; natural resources and the environment; engineering, products, and processes; and markets, trade and policy.

I support the Land Grant Association's recommendation and encourage the subcommittee to provide funding at the $150 million level.

Funding for this program would attract some of the best minds in the country to help in solving the pressing problems of the agricultural, food, and natural resource system. This is important for a number of reasons. During the 1990s the U.S. agricultural and food system will confront challenges from many sides. There is great concern about the impact of present production systems on the quality of our water and the environment. The safety of our food supply and the relationships between diet and health are frequently questioned. Both farmers and state governments are concerned about the viability of rural communities and the need to diversify their economic base. Producers of crops in surplus want new uses for their commodities. Farmers are concerned that we have lost our cost competitiveness in international markets. They ask why so little of our agricultural experts are in value-added form.

Basic research breakthroughs in the biological sciences and in engineering over the past two decades provide tremendous opportunities to solve these problems. Shrinking Federal investments in agricultural, food, and natural resources research, however, make it nearly impossible to capitalize on these tremendous opportunities and to apply breakthroughs in science and engineering to these important agricultural and natural resource problems.

The federal-state partnership in agricultural, food, and natural resources research has been one of the great success stories of the past century. The rate of return on research investments has ranged from 45 to 130 percent. Productivity in U.S. agriculture grew faster than in other American industries and much faster than agricultural production in other countries throughout most of the 20th century. U.S. agricultural productivity is envied by other sectors of the U.S. economy. Our agricultural research system has been emulated by many other countries. Unfortunately, we have grown complacent over the past 30 years. Real federal investment in agricultural, food, and natural resources research has stagnated. Of greater concern, however, is the fact that we are now being out-invested by other countries. Much of our comparative advantage in world markets is based on technological superiority. Technological obsolescence can drag down competitiveness in agriculture, just as in other sectors of the American economy.

A healthy and productive agricultural research establishment requires two critical components. First, an infrastructure consisting of facilities, laboratories, equipment, farms, and research scientists must be in place and well-maintained. Federal formula funds and state appropriations jointly provide this basic agricultural, food, and natural resources research infrastructure. Second, funds must be provided to support the costs of the supplies, technicians, students, etc. needed to make scientists productive. As real Federal appropriations, especially formula funds, have failed to keep up with inflation, support of the infrastructure has been shifting to state and university sources. This has forced states to reduce funds for direct support of research projects.

Competitive research grants provide the funds that make scientists productive. These grants focus scientist's attention on high priority national research issues. The best minds in the country can be attracted to the priority problems of concern to agriculture--whether those minds are in land-grant universities, federal laboratories, or private universities. Competitive grants also assure that research on national issues is conducted efficiently and without duplication of efforts. The proposal solicitation and review process not only allows selection of the best science, it serves a coordination role that helps assure complementarity among projects on national priorities and assures that scientists in different institutions do not duplicate each other's efforts.

USDA's current competitive grants for research on agricultural, food, and natural resources problems are inadequate to meet needs. Grants are too small, for too short a time, and simply not available in several critical research areas. As a result, we fail to attract talent from the broad range of scientific disciplines that we need to solve problems of agriculture, food, and natural resources. We also send signals to young people that discourage them from pursuing agricultural research careers.

In his 1991 Budget the President has proposed a significant increase in agricultural research grants. This is an important first step. Increased Federal investments in agricultural, food, and natural resources research are urgently needed. The problems are national in scope. While many states have increased appropriations to help support the research infrastructure and to solve important state problems, they need help in financing the research needed to solve national problems. I urge the members of this Subcommittee and the Congress to build upon this first step and to work to achieve the agricultural research funding levels proposed by the Board on Agriculture. The future financial health of American agriculture and associated food and natural resource industries is absolutely dependent on research based technology. We cannot allow our technology to deteriorate. This sector's long term sustainability and international competitiveness hangs in the balance.

RODALE INSTITUTE

STATEMENT OF JOHN HABERERN, PRESIDENT

Mr. Chairman and members of this Subcommittee, I am John Haberern, President of the Rodale Institute, a nonprofit agricultural research, demonstration and education organization located in Emmaus, Pennsylvania. I appreciate this opportunity to testify on the need for funding a National Training Program in Sustainable Agriculture through the U.S. Department of Agriculture's Extension Service.

As you are aware, American farmers are the most productive in the world. However, they face many problems today which threaten the future viability of farming. They face continuing problems of profitability and competitiveness and are now confronted with the need to produce food and fiber in ways that pay more attention to water quality, soil erosion, pesticide residues, worker health and safety, and other environmental issues.

The agriculture research system continues to yield an extraordinary array of scientific information and technology that has made our farmers very productive. However, emerging knowledge about potential longterm effects on the environment and human health associated with some agricultural practices, coupled with concerns for long run sustainability and viability suggests the need for new research and information priorities.

Yet considerable information does exist, and much research is available to provide optional production practices to farmers. In fact the U. S. Department of Agriculture has identified $106.1 million of sustainable agriculture research within the Agricultural Research Service and $68.1 million in Federal support for sustainable agriculture programs at the land-grant universities.

However, the results of this almost $180 million in research plus new information coming from the LISA program does not always get to the farmers in timely farmer ready packages. GAO recently interviewed 74 farmers, with a median acreage of 885 acres, in selected counties in Georgia, Illinois, Iowa, Kansas, North Carolina, South Dakota and Wisconsin for their recently released GAO report entitled Alternative Agriculture: Federal Incentives and Farmers' Opinions. The report states, "Although research has suggested that conventional agriculture damages the environment and alternative agriculture can reduce such damages, knowledge of these findings is not reflected in the farmers' statements." Specifically, the report noted that, "A great deal of technical information on particular alternative practices is currently available but much of it is fragmented and not well integrated or accessible to farm producers."

The National Research Council's Board on Agriculture in their 1989 report on Alternative Agriculture states, "Without additions to existing programs and new research and educational initiatives, however, the current system will not be able to provide farmers the kind of information, managerial assistance, and new technologies needed to support widespread adoption of alternative agricultural practices. An effective alternative agricultural research program will require the participation of and improved communication among problem-solving and systems-oriented researchers, innovative farmers, farm advisers, and a large cadre of extension specialists."

Since the inception of the Rodale Institute and Rodale Research Center, we have been working directly with farmers to try to help them with information and research to explore production options which are profitable, yet have a positive effect on the environment and the natural resource base. Our work started years ago and is culminating today in what is known as sustainable agriculture and Low-Input Sustainable Agriculture Program (LISA).

From the very beginning farmers told us that even though they wanted to try new systems and technologies, they could not get the information. Or that it was not in a format that was practical and easy to apply to their operation.

Farmers like Vaugh Edwards, who farms 400 acres of corn, soybeans and wheat in Terre Haute, Indiana said, "We've got a lot of information on cover crops and the like at the universities that could be used to help sustainable farming systems. Some of that information is starting to get out. But it is just not getting applied"

And farmer Mark Graber with 800 acres of corn, soybeans, oats and sweet corn in Delavan, Illinois said, "We need to use more federal money to fund Extension to promote sustainable practices. Extension isn't doing it now."

What can we do to get more of the sustainable agriculture research findings to farmers? Well, we had a very positive meeting with Myron Johnsrud, Administrator of the Extension Service, concerning the need for training for Extension personnel.

Thus, we are requesting an annual appropriation of at least $5 million for a National Training Program on Sustainable Agriculture as proposed by Senator Leahy in The Sustainable Agriculture Research and Education Act of 1990. This training program is designed to add value to the present extension efforts by providing a special focus on sustainable agriculture, preparing farmer-friendly materials, assisting researchers and farmers as well as extensionists to improve communication skills, and expanding the system with the integration of farmers and public and private sector organizations into the process.

Two National Training Center sites are proposed. They will be located at existing facilities so that no funds will have to be appropriated for facility construction. It is hoped that the Extension Service will give strong consideration to establishing the centers at the Rodale Research Center in Kutztown, Pennsylvania and at The Leopold Center for Sustainable Agriculture in Ames, Iowa.

The National Training Centers will become central locations for extension education on sustainable agriculture, drawing on the research knowledge of the various agencies in the Department of Agriculture, the state agriculture experiment stations, private and public research and educational organizations, and the practical experience of farmers especially those cooperating in on-farm demonstration and research projects. They will provide education and training in sustainable agriculture for extension agents, experiment station researchers, farmers, and other professionals involved in education and transfer of technical information. The goal will be to develop an understanding, competence, and ability to teach and communicate the concepts of sustainable agriculture among farmers and others they serve. The training of trainers is the output on which the success of the program will be ultimately judged.

The need for training is recognized in the March 1990 GAO Report, U.S. Department of Agriculture Need for Improved Workforce

Planning. The report states, "Recruiting and training the right people for developing policies and implementing programs is a major challenge in USDA. It will become even more difficult in the future as USDA attempts to cope with new and increasingly complex issues such as food safety, biotechnology, and environmental concerns.. These issues cut across agency programs lines and require specialized skills"

The National Training Program in Sustainable Agriculture will be organized and administered jointly by the two Centers and the U.S. Department of Agriculture's Extension Service. On-site education at the Centers as well as education at other locations including land-grant universities, experiment stations, and demonstration farms will be part of the program. The training staff will be drawn from the centers, the land-grant universities research and extension staffs, and others within the respective region where the training occurs. The program will offer intensive instruction programs lasting up to several weeks and involving classroom and field work. Workshops and short courses designed to familiarize participants with the concepts of sustainable agriculture will also be offered.

In closing, I would like to thank the members of this Subcommittee and the other members of the Senate who have been so supportive of the LISA research program funded through the U.S. Department of Agriculture's Cooperative State Research Service. I hope that we can continue to count on your support for the LISA program and for an additional $5 million for the Extension Service's proposed National Training Program in Sustainable Agriculture. .

0374

RUTGERS UNIVERSITY

STATEMENT OF T. ALEXANDER POND, ACTING PRESIDENT

Mr. Chairman:

I am T. Alexander Pond, Acting President of Rutgers, the State University of New Jersey and I am here today to testify on behalf of the United States Department of Agriculture program which provides matching funds for construction of agricultural facilities at American universities. This program continues a great tradition of the federal government assuming an appropriate role in a federal-state-industry-university partnership to support our agricultural economy, a role that has existed since the Morrill Land Grant Act of 1862.

Rutgers now seeks matching funds for construction of a Plant Bioscience complex under this program. During the last three years this Committee has appropriated almost $400,000 for the study and planning of the facility which is currently in its final design stage. Mr. Chairman, we are extremely grateful for your strong vote of confidence in developing the project thus far.

The sole purpose of this facility is agriculture; all space in the building will be used for teaching, research and public service activities for New Jersey and United States agriculture.

The state and the university have authorized $27 million towards construction of the $37 million first phase of the Plant Bioscience complex. The university has committed an additional $10 million in ancillary facilities such as greenhouses and containment facilities for genetically engineered plants. We are now in need of the $10 million federal matching component so that the actual construction of the facility can proceed in a timely manner, and to ensure that the momentum so far generated for New Jersey agriculture and the State's Agricultural Experiment Station will not be lost.

The programs of the New Jersey Agricultural Experiment Station support the state's $15 billion agriculture and food industry, an industry that is strong and viable, but like agriculture throughout the United States, is facing serious challenges. These challenges result in large part from urbanization and the associated pressures of competition for natural and human resources, the proximity of agriculture to often incompatible neighbors, and growing public concern over the impact of intensive agriculture on a fragile ecosystem. Although these are problems common to all agriculture, in New Jersey, the most urbanized state in the nation, we experience them sooner and more intensely. Our responses can lead the way for others.

If these challenges are not adequately addressed, they will ultimately result in the deterioration, if not the demise, of agriculture in our state. I am certain that this Committee understands the value of maintaining the diversity of the nation's agricultural production systems, and the importance of having healthy agricultural programs in each state.

To meet these challenges, the New Jersey Agricultural Experiment Station has taken the lead in developing a strategic master plan called Vision 21. Its goal is no less than to achieve premier status for Rutgers and its Agricultural Experiment Station among the nation's land grant institutions. We cannot afford second best because what's at stake is the preservation of agriculture production near the nation's largest market, strengthening important food processing and packaging industries, the protection of our fragile coastline and the quality of our environment, proper management of our enormous toxic and hazardous waste problem and harnessing new technologies including biotechnology to these ends.

Vision 21 is an appropriately aggressive plan. It calls for major capital resources to improve our research and teaching facilities, for a $27 million increase in our annual operating budget, and for the establishment of advanced technology centers. To succeed, we need to forge partnerships between public and private sectors, and state and federal funding sources.

The plan has been in place for just over three years, and I can proudly report progress showing the clear commitment of our region, our state and our university.

The New York/New Jersey Port Authority, in support of our marine industry, has provided $13 million towards a $21 million marine science center.

New Jersey voters recently approved a $350 million Jobs, Education, and Competitiveness Bond issue in support of higher education. The bond passed by the highest vote margin in the history of the state, provides over $40 million in support of the Agricultural Experiment Station.

In the last three years, direct state appropriations in support of the New Jersey Agricultural Experiment Station have increased by $3.1 million - a 19 percent gain.

During that same period the New Jersey Commission on Science and Technology has provided $8 million in new operating funds and $10 million in capital construction funds in support of four advanced technology centers operating under the umbrella of the New Jersey Agricultural Experiment Station. These are centers in food science, agricultural biotechnology, food technical extension, and fisheries technical extension.

Rutgers, through its Fund for Distinction, has provided $27 million in support of the capital building program at the Experiment Station. In addition, it has provided working budget increases of $1.7 million to Cook College, and over $8 million in support of start-up costs for new faculty and new academic facilities. The university has also hired six world class scholars as part of its Excellence Program and located them at the New Jersey Agricultural Experiment Station.

New Jersey's food production industry also has begun to fund the station, by providing $1 million in grant funding for our Center for Advanced Food Technology and by generating more than $750,000 in support of the center's annual operating budget through membership fees.

Thus, over $102 million for our capital needs and over $10 million in new operating funds have been generated in support of the Agricultural Experiment Station and its strategic plan, Vision 21. By any reasonable measure, these contributions provide the strongest possible evidence of commitment by the university, the state and the region to our land grant mission and responsibilities.

We are grateful to this Committee through its study and planning grants for being such an important partner in these efforts. It is now time to build on these efforts by moving on the construction of the Plant Bioscience Complex -- the cornerstone of our capital and program plans. This building underpins our philosophy that we must integrate the latest technologies with traditional approaches to solve the problems facing modern production agriculture and the environment.

This $75 million, 280,000 square foot complex when fully developed will allow us to appropriately house the Center for Agricultural Molecular Biology, a high-tech center consisting of sixteen world class scientists and their support staffs under the direction of Dr. Peter Day, a world renowned agricultural biotechnologist and geneticist; and it will also allow us to coordinate the center with the academic departments of Plant Pathology, Horticulture and Crop Science, Entomology and Plant Bioscience, by housing them together in a single facility.

The building will contain state-of-the-art research laboratories, a research library, teaching classrooms and laboratories, and attached greenhouses. Associated with the center will be a branch facility in southern New Jersey for biological risk assessment, critically important for the testing of engineered plants and microorganisms.

With this fully developed complex we will be able to integrate basic and applied research with extension activities to better ensure that agriculture in the Northeast remains profitable and environmentally sound. It also allows us to provide training for undergraduate and graduate students in plant biology to meet the growing demand for such scientists, who we anticipate will be in short supply.

We have $27 million in hand towards the construction of the $37 million first phase of the complex. Although we plan eventually to ask the Federal government for an additional $27 million to match our existing commitments, we request $10 million in FY 1991 in support of Phase 1. This is the vital first step towards the achievement of our goal.

Thank you for your consideration. My colleagues and I from the state, the university, and the agricultural community would be pleased to respond to your questions.

SELECT COMMITTEE ON INDIAN AFFAIRS

STATEMENT OF HON. DANIEL K. INOUYE, U.S. SENATOR FROM HAWAII

On behalf of the Senate Select Committee on Indian Affairs, we are grateful for the opportunity to submit written testimony regarding funding for proposed Indian programs relating to the FY 1991 budget for Agriculture, Rural Development, and Related Agencies. The top priorities of our Committee are to: re-establish the Cooperative Extension Agents on Indian reservations and to establish an Indian Subsistence Gardening Project to address nutritional deficiencies among Native Americans.

Testimony before the Senate Select Committee on Indian Affairs by Native Americans, the Bureau of Indian Affairs, and the Department of Agriculture has shown that agriculture is the largest single contributor to the economic and social well being of the reservation communities. Additionally, tribal governments rely heavily on agricultural enterprises to fund basic government services. Unfortunately, American Indians and Alaska Natives have been largely excluded from the past farm programs due to a multitude of barriers including governmental indifference and statutory barriers.

Reservation residents all too often do not have access to existing County Extension Agents. The reason most frequently given is that Indian trust lands are not under county and state jurisdiction and therefore do not directly contribute to the county or state tax rolls. This leads to pressures from the local county governments or Agriculture Stabilization Conservation Service boards on the local Extension Agents to exclude services to Indian farmers and communities. In the early 1970's, $10 million was appropriated to the Bureau of Indian Affairs to provide extension services on Indian reservations. Over the years, funding has fallen to slightly more than $400,000 per year, effectively denying extension services to all but a few Indian communities.

The Joint Hearing held February 20, 1990, by the Select Committee on Indian Affairs and the Committee on Agriculture, Nutrition, and Forestry reinforced the critical need for Reservation Extension Agents. The presence of Agents on Indian reservations is the first step in removing the barriers to full Indian participation in national farm programs. The re-establishment of Reservation Extension Agents to provide extension services to the American Indian communities is major initiative of the Indian tribes and our Committee. In attempting to re-implement this important agriculture program, Indian tribes and USDA officials have developed a proposal to re-establish agents on the larger reservations with $6.5 million to be earmarked from appropriations for the Department of Agriculture's Extension Service for the Reservation Extension Agents. Authorizing language for this purpose has been included in the Research and Extension Title of the 1990 Farm Bill. The proposal to ear-mark $6.5 million in the Department of Agriculture for extension services on Indian reservations is extremely modest, but the benefits will be great.

Cooperative Extension Agents provide the link between new agriculture technologies developed by the Land Grant Colleges and the application of these developments by the nation's farmers and ranchers. They also serve a liaison function with other USDA programs, such as FmHA, assist in developing farm plans for financial institutions, provide training in farm and ranch business management and record keeping, supervise youth activities such as 4-H, and coordinate special training programs such as food storage techniques, nutrition, and subsistence gardening. With the absence of this information flow to the reservations, Indians are falling further and further behind in agriculture technologies.

We recommend the re-establishment of the program of reservation agriculture extension agents specifically to serve those Indian reservations and tribal jurisdictions with sufficient acreage or population to be roughly comparable to counties in size or complexity. This will mean establishing one Agricultural Extension Agent on each Indian reservation, Indian community, Native Association, or Consolidated Agency with at least 120,000 acres, and 2 agents on those reservations with over 1,000,000 acres. A total of 86 agents will be required to implement this program. In addition, a direct extension assistance program should be established for those reservations which do not qualify based on acreage criteria. The purpose of this program is to provide a direct response to specific tribal government requests for extension assistance. This national program should be operated directly out of the Cooperative Extension Service central office.

The emphasis of the reservation extension program should be on traditional extension service activities in agriculture development, management and the youth activities of 4-H. In addition to conducting traditional agricultural and youth extension programs, the reservation extension agents will serve as catalysts and referral sources between the reservation or Indian community and local USDA agencies and programs.

Our second area of concern is the alarming number of nutritional deficiencies found in the Indian population. Immediate action needs to be taken to improve the nutritional health of Native Americans. Nutritional related abnormalities and diseases continue to affect many Indian people, manifesting themselves in a variety of forms such as diabetes, hypertension, and malnutrition. The rate of diabetes amongst Native Americans is at least five times higher than the national average. According to a recent GAO study, a contributing factor to these health deficiencies is the food provided through the commodities distribution program. Fresh produce is often prohibitively expensive and often cannot be obtained within any reasonable distance from an Indian reservation or the home of the commodities food recipient. Underdeveloped community infrastructure, isolation, and lack of training and educational resources pose major problems on reservations. The proposed Indian Subsistence Gardening project would be designed to grow fresh produce which would be made available to combat nutritional inadequacies.

We anticipate that the Committee on Agriculture, Nutrition and Forestry will include an authorization for the establishment of an Indian Subsistence Gardening Program in the Nutrition Title of the general Agriculture Reauthorization bill now under consideration. We request an appropriation of such sums as may be necessary and appropriate for the first year funding of this program.

We again express our appreciation for this opportunity to comment on these appropriation requests. We hope that these comments will be of help to the Appropriations Subcommittee on Agriculture and Related Agencies. We look forward to working with you and your staff.

SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION, INC.

STATEMENT OF STANLEY E. KOLBE, JR.

LOW INTEREST LOAN PROGRAM FOR THE RURAL ELECTRIFICATION ADMINISTRATION

On behalf of the Sheet Metal and Air Conditioning Contractors' National Association, Inc. (SMACNA), representing more than 5,000 construction firms, I want to express our opposition to the Department of Agriculture's low interest loan program for the Rural Electrification Administration (REA). I urge your support for the Administration's REA reform proposal for FY91.

SMACNA opposes the use of low interest federal loans to Rural Electric Cooperatives (RECs) which result in funding unfair utility competition with small businesses. Below market pricing, financing and sales in markets traditionally served by small businesses is a direct and harmful result of the federal REA Loan Assistance Program.

SMACNA believes that REA should be subsidized only with regard to the energy generation and distribution needs of rural areas. The REA should not be subsidizing unrelated REC business ventures competing with private businesses. Further, the REA should be self financing rather than depending on massive federal subsidies to survive. However, when federal funds are used by the REA and RECs, safeguards should be attached to the loan funds to prevent unfair competition with small businesses. Due to the REA loan program, the special 501(C)12) tax status of RECs, marketing ability and financial resources, RECs have a government subsidized advantage over private businesses, especially in the heating, ventilating and air conditioning market.

While similar anti-competitive practices by utilities are generally regulated by federal government agencies (Security and Exchange Commission (SEC), Federal Trade Commission (FTC), Department of Energy (DOE)) and state public service commissions, most RECs are unregulated at the state or federal levels. Due to the escalating level of anti-competitive practices by RECs in suburban and urban areas, SMACNA supports full scale reform of the REA subsidy program beginning with the proposal put forth by the Administration for FY91.

HISTORICAL PERSPECTIVE

The REA was established in its permanent form in 1936 (7 U.S.C. 901-950(C)12). The REA was authorized to make loans and guarantee loans to expand electrification and telephone service into distant and rural areas. REA was also given the authority to make grants and loans for the purpose of promoting rural economic development and job creation projects. It was not the intent of Congress in 1936 to create the REA as a competitor or a predator of suburban and rural small businesses. The Treasury provides the financing to the REA and the REA loans the funds to RECs at five percent interest, with a maximum amortization period of 35 years. REA also furnishes, without cost to the borrower, regular and frequent business management and technical services. Over the past 15 years the value of REA subsidies has amounted to $50 billion. With 99 percent of all rural residents now receiving electric services and private sector loan sources abundantly available, this program represents one of the governments most unnecessary and wasteful loan and loan guarantee programs. To worsen the federal deficit the Rural Electrification and Telephone Revolving Fund has been exempted by the REA Act of 1936 as amended, from paying annual interest costs owed the Treasury on loan advances totaling $7.9 billion. It is a luxury expenditure the federal government can not afford and one that unfairly penalizes small business.

The fact that REA reported, in recent years, that only a small fraction of the five percent REA loans approved since 1976 have been used to service truly rural areas emphasizes the outdated nature of the program. To illustrate the extent of the problem, REA borrowers are providing energy system service programs traditionally offered by small businesses in suburban areas near Dallas, Washington, D.C., Atlanta, Minneapolis/St. Paul, New Orleans and St. Louis to name a few. Vacation areas also receive anti-competitive, subsidized service programs from REA borrowers, including Vail and Aspen Colorado, Hilton Head, South Carolina, and Orlando, Florida. The Administration's proposal to cut the loan fund to $200 million for REC's that can not borrow from private sources is a step in the right direction. The proposal would provide 90 percent REA guarantees of power supply loans and 70 percent guarantees of electric distribution loans made by the private sector. This is a fair method to prevent "withdrawal shock" for RECs living on generous REA loans at terms unavailable to small business. A gradual phase-out of the loan and guarantee program should give REA and RECs a reasonable period of time to become efficient businesses, operating under standard business practices and regulations.

Unfair competition from public utilities is not new on the Congressional agenda. There has been a number of hearings on the harm to small business by ratepayer subsidized utility programs in recent years. The federal government and many states have since passed laws preventing cross subsidized, below market financing, pricing, service and installation programs by utilities to provide a fair competitive market for small businesses. California, Wisconsin and Iowa were the leaders in passing such law.

In response to widespread complaints by the small business community, over unfair REC competition, the previous Administration and numerous state public service commissions sought termination of the REA loan program, reduction in funding and regulatory reform of REA programs. In September 1988, the Administration stated in a letter to Congress that "The Administration objects strongly to continuing the highly subsidized REA direct loan lending program....The Administration's budget includes a number of long overdue reforms that would convert the costly five percent loans to REA guarantees of private loans." The Administration in the same letter voiced objections to a $325 million appropriation for interest subsidies and losses in the REA loan program. Unfortunately, Congress and various state legislatures have preserved the heavily subsidized and generally unregulated environment for electric cooperatives. It is now time for Congress to act.

To address this issue SMACNA was a co-founder five years ago of the National Alliance for Fair Competition (AFC) a coalition of more than thirty national and state associations and organizations fighting anti-competitive practices by utility RECs at the state level. However, in the last few years the protest against unfair practices by RECs has reached beyond state capitals to the top of the agendas of numerous trade and labor associations, SMACNA being one of them.

SBA SUPPORTS REFORM

In 1989 the Small Business Administration (SBA) issued a major report entitled, Competition Between Small Businesses and Rural Electric and Telephone Cooperatives in Non-Utility Business. Enclosed is a copy of the report for the hearing record. According to the SBA report, only seven states have authority to regulate diversification into small business markets or anti-competitive practices by RECs. The SBA also found that "the diversification of cooperatives and regulated utilities into non-utility businesses has significant implications to the competition in the unregulated markets, particularly the effect of this diversification on the ability of certain small businesses to survive".

The list of recent business ventures documented in the SBA study, include non-utility areas such as natural gas, marketing and sales, satellite dishes and equipment, cable TV, appliance sales and services, customer surveillance equipment, 2-way radio, telephone business systems, cellular phones, computer equipment, and heating and air conditioning services. Within these categories of REC operations are hundreds of different products and services for sale and installation.

SBA further reported, "Competition with monopoly utilities in the non-utility market can result in the destruction of small business competitors who do not have the low cost financing, management talents, marketing advantages and special tax treatment." While SMACNA members and other small businesses do not fear tough competition, the new REC entrance into our marketplace have competitive advantages not based upon business or market efficiency but on government subsidies.

A CASE EXAMPLE

In the fall of last year in the State of Missouri a number of manufacturers and hundreds of small businesses complained to their state and national leaders, the FTC, and their trade associations over a new aggressive REC venture into the heating and air conditioning sales and installation market. The specific system promoted by RECs involved ground source heat pumps which are expensive and labor intensive to install.

Within a few months of the REC advertising blitz of incredibly low prices, large rebates, five percent financing over seven years and unheard of give-away incentives, contractors reported business drop-offs exceeding twenty percent. Employee layoffs, cut-backs in hours and a general feeling of contractor desperation engulfed the area from St. Louis to Columbia. A small business coalition was formed and Missouri's U.S. Senators and Representatives were contacted, as was the Missouri Public Service Commission and the FTC. The responses to the Coalition were the same--no one had control or authority over the REC in question.

An example of the REC's bid for a Missouri Ground Source Heat Pump (GSHP) is as follows:

3 Ton GSHP		5 TON GSHP
$1,120.95	GSHP	$1,612.26
$1,375.05	Complete Installation	$1,687.74
$2,500	Selling price - Financed For 7 years, 5% interest	$3,300
$-1,050.00	Rebate	$-1,750.00
$1,450.00	Final Cost to Homeowner	$1,550.00

This example excludes mark-up on mechanical systems but includes:

- Ground water wells drilled at no charge
- Charges representing only material costs of ground pipe, electrical materials and air handling duct changes
- REC employees used for installation

Since a small business person must be profitable to stay in business, must pay wages to installers, pay workmen's compensation and many other mandated benefits, liability insurance, advertising, sales tax and income tax he cannot compete with an REC on this project or other similar projects. The same system would have a fair market cost to the homeowner if installed by a private business of: 1) 3 ton--$4,000-$4,300 2) 5 ton--$5,200-$5,600.

As one can easily understand from this common example, the REC cannot be beaten when it enters the marketplace with the federal government as a partner bankrolling its ventures.

Another issue raised by the Missouri situation is the propriety of the REC campaign to switch new customers to electric heating and cooling systems and to increase the electric usage of current customers.

While contractors in Missouri offer all types of systems manufactured by various companies, the RECs are promoting electric systems by one manufacturer with deep discounts and subsidies to make the sale. This is a problem the Agriculture and the Energy Committees in Congress should examine.

SMACNA'S RECOMMENDATIONS FOR REA REFORM

1. Due to the overwhelming need for federal budget reductions, SMACNA urges your support for the Administration's FY91 budget proposal to reduce and phase-out the overall REA loan subsidies program. The REC network is large and financially strong--*it* needs to stand on its own with private capital.

2. To remedy the unfair competitive advantages of cooperatives against non-subsidized, tax paying small businesses, Congress should develop and implement major reforms for the entire REA assistance program. These reforms could follow those outlined in H.R. 1232, a bipartisan bill currently before the Agriculture Committee, which severely limits the geographic areas receiving REA loans to rural areas in markets not adequately served by other small businesses.

3. To further restrict unfair competition, the REA should immediately request an audit of all cooperative borrowers with non-utility businesses to determine the extent of cross subsidization between utility and non-utility activities. A small business impact statement should also be required of each REA borrower to be reviewed by the General Accounting Office on an annual basis.

4. The FTC should be directed to investigate and issue a report on the anti-competitive practices common in REC marketing, sales, service, installation and advertising efforts. Guidelines for review of the anti-competitive activities of RECs should be recommended to the nation's Governors and the Public Utility Commission in every state where the REA is involved.

5. Congress should amend the tax laws pertaining to the non-utility ventures of RECs to require that the IRS fairly tax unrelated REC business income as it does small business income. Congress received such recommendations from the Comptroller General in 1983 in a report entitled, "**Legislation Needed to Improve Administration of Tax Exemption Provisions For Rural Cooperatives**", but failed to act on them. These tax changes would better recognize the vast changes in electric cooperatives' operations, activities and income sources since the generous REC tax exemption policy was established in 1924.

6. Congress should provide leadership to the states that do not have public service commission authority to regulate rural electric cooperatives. Congress should mandate that public service commission review of REC activities be a requirement before REA assistance or other related REA benefits could flow to a particular state.

CONCLUSION

The opportunity to reform and update the REA Loan Program is before Congress. The Administration's proposal provides for substantial budget savings and competitive benefits to the small business community. Less than two weeks ago on March 15 as part of H.R. 3581, the Rural Economic Development Act, the House passed an amendment without opposition to improve the climate for small business in rural areas. The Senate will soon take-up this measure. By accepting the Administration's proposal and by passing additional REA reforms, Congress can send an even stronger message to the small business community that the free market is on its way to recovery in rural America.

STATEMENT OF HON. ALAN K. SIMPSON, U.S. SENATOR FROM WYOMING

IN SUPPORT OF ENVIRONMENTAL SIMULATION FACILITY
Agriculture Appropriations Subcommittee

Mr. Chairman, I do wish to voice my strong support for inclusion of $1.5 million in the FY 91 budget to be used for planning and design for a water quality research center at the University of Wyoming. Senator Wallop and I have written you jointly on this subject, but I did want my firm support to be noted in the committee record as the budget is considered.

This project is to be based on a state-of-the-art Environmental Stimulation Facility (ESF), developed in prototype over the last 11 years by scientists at the University of Wyoming. The ESF is capable of reproducing climatic and environmental conditions throughout the world, to research and study solid and hazardous waste disposal and biological cleanup of polluted ground and surface water scenarios. It is a most exciting facility.

The total cost of construction (which will house six (6) additional simulation laboratories) is estimated at $15.5 million over three years, with substantial commitments from the State of Wyoming for site preparation, maintenance, and personnel.

President Bush has clearly placed a priority on research, as is evident in his funding level of $300 million for the water quality initiative. The proposed ESF will give us a better understanding of the causal linkage between production practices and water quality degradation. The facility could be a very effective tool for water quality research geared toward reducing agricultural and energy industry-related contamination of our national water resources.

The U.S. Department of Agriculture, Department of Energy, Environmental Protection Agency, Interior Department, and Department of Defense have all been fully briefed on this proposal, and all have expressed interest in it and have recognized its potential usefulness.

I do appreciate your continual consideration in making my comments a part of the Committee record on consideration of the FY 91 budget.

Respectfully submitted,

Alan K. Simpson
United States Senator

SOCIETY FOR ANIMAL PROTECTIVE LEGISLATION

STATEMENT OF CHRISTINE STEVENS, SECRETARY

A large number of animal protective organizations and biomedical organizations have joined together to request, as a matter of urgency, a modest increase in funding for enforcement of the Animal Welfare Act. The Act is the nation's primary legislation on the subject. It was passed by overwhelming public demand, and each of its strengthening and broadening amendments have had similar support. Americans expect that the law will be strictly enforced.

Last year, it was not. In a shocking failure to inspect the premises of animal dealers, a full 24.8% were not visited even once! They should be inspected three times a year in order to maintain the minimum standards required by the Act. The law specifies that if a "deficiency" (as violations as serious as death from starvation are euphemistically termed) is found, a return inspection must be made till all deficiencies are corrected. Obviously, this did not occur in the case of nearly one-quarter of the dealers. The law has been broken and the American public has been misled because insufficient funds were appropriated last year to enforce the law.

I wish to submit a few photographs of dog dealers' premises to this distinguished subcommittee to ensure your understanding of the seriousness of the situation. Here are photographs of premises of a dealer found guilty by the U.S. Department of Agriculture of grossly violating housing, sanitation and veterinary care standards. The dealer also concealed the source of animals by consistently giving wrong information about them and refused inspectors and law enforcement officers access to his business records.

Suppose this was one of the dealers who were never visited during the entire course of the year! I want to emphasize that there is no alternative checking mechanism in place when U.S. Department of Agriculture inspectors fail to show up for want of funds.

I have made it a point to speak of the dealers because so great a proportion received no inspection whatever; however it is essential to recognize what a massive job inspectors for Regulatory Enforcement and Animal Care (REAC) are required to do. They have 9127 inspection sites throughout the United States! USDA states that they will average twice a year inspections, but these include the return visits the law requires them to make until all deficiencies are corrected - so only by stretching a point can an average of two inspections a year be reached, and the fewer inspections are made, the more rapid the decline in standards, as experienced veterinary inspectors routinely observe.

At the present time there is not a sufficient number of inspectors in REAC to do the job. Some states do not even have one single veterinarian and one technician to do the necessary inspections. Oftentimes travel time takes up more time than the inspection itself since the REAC staff is so small and may have to come from a long distance. When Veterinary Services conducted the inspections, the large staff was more evenly distributed over the country enabling inspectors to reach licensed or registered premises more readily. Now that the reorganization has taken place, it is essential that Congress appropriate more funds just to stay level with the workload.

The Society for Animal Protective Legislation did not ask for the reorganization, indeed we opposed it because we foresaw the difficulties in making it workable. However, for better or worse, we have it, and we cannot lose faith with the American public who are counting on the Congress to make the Animal Welfare Act work for the animals.

The support of a large number of scientific organizations, including the largest users of experimental animals, demonstrates the Act's value in maintaining the standards necessary for meaningful scientific results. Without the Animal Welfare Act's surveillance and requirement for minimal standards, American research would be the poorer.

I urge you for both pragmatic and moral reasons to appropriate $12 million for FY91 to enforce the Animal Welfare Act.

Horse Protection Act

Others will address in detail the need for funds to enforce this law. The Society for Animal Protective Legislation supports the budget request for $450 Thousand. Last year only $161 Thousand was appropriated, making it impossible, even with greatest economy, to administer the law.

SOIL AND WATER CONSERVATION SOCIETY

STATEMENT OF NORMAN A. BERG, WASHINGTON REPRESENTATIVE

Honorable Quentin N.Burdick
Chairman,Subcommittee on
Agriculture,Rural Development,
and Related Agencies
United States Senate
Washington,D.C. 20510

Dear Mr. Chairman:

As you stated in your memorandum of February 2,1990 to Mr. Verlon K. "Tony" Vrana,Executive Vice-president of the Soil and Water Conservation Society(SWCS),your subcommittee will not be holding public witness hearings this year.However,the opportunity to submit a prepared statement,for fiscal year 1991 appropriations for U.S.Department of Agriculture soil and water conservation activities,is appreciated by SWCS.

We have attached to this letter the tables that compare the Administration's FY'91 budget proposals to the FY'90 final appropriations for the several agencies that provide soil, water,and watershed programs for research,extension,cost-share,credit,and technical assistance.The recommendations for FY'91 funding for this work,by our Society,is indicated in the final column.These suggested levels of appropriations are based on careful analysis of the activities of each USDA agency who contribute to the conservation and environmental actions in the United States.Therefore,though we do request increases above the funding proposed by the Administration, we feel our recommendations are modest when viewed from the perspective of a probable $ 1.23 trillion budget for FY'91.

Mr.Chairman,the budget levels proposed for several agencies are more realistic this year.We commend the recognition that cost-share funding for ACP,FIP,Water Bank,and GPCP should be supported.Full funding of the Conservation Reserve Program is also warranted.The Water Quality Initiative,focused on the contribution of agricultural nonpoint pollution including pesticides and nutrients to surface and groundwater quality, is high priority work and fully supported by the Society.

We have provided the Committee with the findings of field-oriented assessments of how implementation of the FSA work is progressing"on the ground".These two documents will be the first in a series of annual reports that SWCS will release during the course of a three year study by my Society. One important finding relates to the cost-share and technical help needed to implement 1.5 million"Conservation Compliance" plans.That type of assistance will need to be accelerated.

The credit funding proposals for the Small Watershed and the Resource Conservation & Development Projects are inadequate for these popular programs.Hopefully your Committee will not adopt the Administration's request to zero out these loans.

The President's call to plant a billion trees each year is commendable.However,the long-term dedication of Conservation

Districts,with assistance from the SCS and ASCS,should not be overlooked for this type of field-based conservation work.

The Society supports the National Initiative for Research on Agriculture,Food,and the Environment.Included in this should be a more realistic appropriation for Sustainable Agriculture Research and Extension activities.

I have had the privilege of presenting testimony to your Sub-Committee for three dcades.There is no doubt in my mind that you will again do everything possible to support adequate funding for the Nation's soil and water conservation work in FY'91.The SWCS will be pleased to work with your Committee to assure a complete review of the 1991 budget for agriculture, rural development,and related agencies as you suggested.SWCS is dedicated to advancing the science and art of good land and water use.We appreciate your dedication to conservation.

Thank you and best wishes,

Norm Berg

Norman A.Berg
Washington Representative
Soil and Water Conservation Society
1920 N Street N W Suite 400
Washington,D.C.20036
(202)659-5668

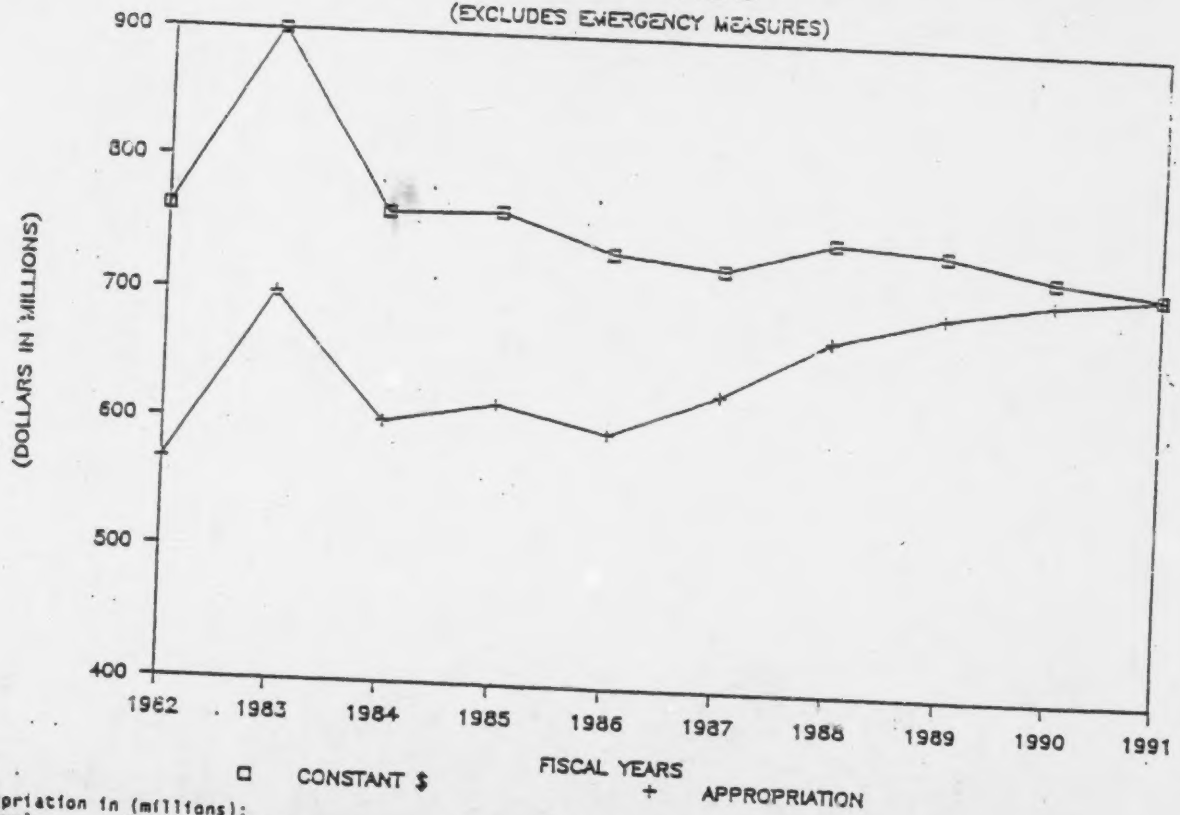
Soil and Water Conservation Society *(SWCS)
Fiscal Year 1991 Funding Recomendations

Agency	FY'90 Final Appropriation	FY'91 Administration Proposal	FY'91 *(SWCS) Recommended
		(In Millions of Dollars)	
Soil Conservation Service:			
Conservation Operations			
Ongoing programs	476.9	489.4	496.0
1985 FSA Implementation		0.0	60.0
Water Quality Initiative		17.6	35.0
River Basins	12.3	10.4	12.5
Watershed Planning	8.8	6.9	12.0
Watershed Operations	179.9	151.1	200.0
Great Plains	20.9	24.6	25.0
RC&D's	27.3	24.9	35.0
Total for SCS	726.1	724.9	875.5
Funds transferred to SCS:			
Office of Surface Mining (RAMP)	12.0	. 2.1	20.0
Agricultural Stabilization and Conservation Service:			
Conservation Reserve(CRP)	1,011.0	2,253.6	2,470.0
ACP	182.4	176.0	215.0
FIP	12.4	12.4	25.0

Water Bank	12.2	12.8	25.0
Colorado Salinity Control	10.3	14.8	15.0
Agricultural Research Service:			
Soil and Water Conservation Research	73.6	89.0	90.0
Cooperative State Research Service:			
Hatch Act	155.1	158.5	160.0
McIntire-Stennis	12.3	13.0	18.0
Rangeland Research	.5	0.0	1.0
Sustainable Agriculture	4.5	4.5	15.0
New federal research funding, National Initiative(CARAFE)	42.6	100.0	150.0
Cooperative Extension Service:			
General Formula Funds	242.7	246.5	257.0
Earmarked Programs			
Water Quality	5.2	15.5	16.0
Pesticide Impact Assessments	2.6	3.6	4.0
Integrated Pest Mangement	7.1	7.2	12.0
Renewable Resources Extension Act	2.7	0.0	15.0
Farmer's Home Administration:			
Rural Community Fire Protection	3.1	0.0	3.1
Soil & Water Loans-Direct	5.5	0.0	14.0
Soil & Water Loans-Guaranted	1.5	0.0	0.0
Watershed Protection and Flood Prevention	4.0	0.0	8.0
RC&D Loans	.6	0.0	1.2

ALL FUNDS

(EXCLUDES EMERGENCY MEASURES)



Appropriation in (millions):

Actual.....	$567.0	$698.3	$599.9	$615.4	$594.6	$628.3	$673.1	$694.0	$707.4	$714.8
Constant...	$762.5	$912.6	$760.7	$763.2	$733.9	$724.5	$747.1	$741.1	$724.5	$714.8

SOUTH CAROLINA PEACH COUNCIL AND PROMOTION BOARD, INC.

STATEMENT OF TRACY CHILDERS, PRESIDENT

The South Carolina Peach Council, on behalf of the entire South Carolina peach industry, is vitally interested in continued federal funding for the Federal Crop Insurance program in fiscal year 1991 appropriations. We feel that Federal Crop Insurance is the only viable program which can offer essential protection for producers of high cash value crops such as peaches, apples, and other fruit and vegetable crops produced in the United States. We therefore request that the subcommittee fully fund the Federal Crop Insurance program in 1991 and beyond at current levels with an inflationary factor built in to keep future funding levels at todays values.

Our organization realizes the problems the Federal Crop Insurance program has faced in recent years. For many row crop producers the expense of crop insurance can not be justified due to low commodity price levels and the low return from insurance in the event of loss. However, we do feel that this program can be restructured to appeal to all producers but it must offer satisfactory protection at a reasonable cost.

The peach industry and other similar agriculture industries which require a tremendous cash outlay per acre have always been strong supporters of the crop insurance program. Many of these non-program crops cannot count on subsidies from the federal government to offset high production costs and the disaster programs do not begin to cover the expense an average grower incurs in producing a crop of peaches when disaster strikes.

For example, in South Carolina, it cost roughly $170.00 per acre to produce an average yield of soybeans. Corn ranges from $180.00 to $375.00 per acre. Peaches, on the other hand, cost the average producer roughly $3500.00 per acre once he has established an orchard and achieved normal production levels. There is no question that crops such as peaches require investments each year that place the producers under considerable risk. The only means we have to offset this risk is the crop insurance program.

Disaster programs under current standards and guidelines do not offer a viable alternative to the Federal Crop Insurance program. Granted these monies have been extremely helpful when made available to peach producers but the $100,000.00 dollar limit does not even begin to cover the production cost of an average producer. If this is the only program available to producers, one or two disaster years would have many producers owing hundreds of thousands of dollars with their only source of relief a one-hundred thousand dollar disaster program and no means to offset the other risk and loss involved.

The peach industry is not asking for funding for a program which will cover all costs plus add a substantial income for the producer. We are simply asking for funding which will allow a producer to insure his risk at adequate levels so that in the event of loss he will be able to stay in business the following year.

The current Federal Crop Insurance program definitely needs improvements. Crop insurance is not perfect in the protection it offers producers, but it does have the potential to be a viable and worthwhile program for every farmer in this country.

We have to believe that all producers should be willing to insure their crops if an economical, comprehensive program that offers reasonable protection is made available. No one should sit back, make no effort to insure their risk, and expect the federal government to bail them out when things get rough.

Working together, the federal government, through its cooperation with farmers and the Federal Crop Insurance Corporation can offer a program that all producers would want to participate in each year. The program would have to be revamped at reasonable cost and production levels. It would have to offer more complete disaster coverage based on the variable cost of production involved with the wide variety of crops produced in the United States. But it can be done!

Continued funding is desperately needed for this vitally important, self-help program currently available to producers. We respectfully request that you fully consider the importance of the Federal Crop Insurance program, particularly as it pertains to non-program, high cash input crops produced in the United States.

Thank you for allowing us to brief you on the importance of the crop insurance program and please advise us if more information regarding this program is needed by the subcommittee.

SOUTH DAKOTA STATE UNIVERSITY

STATEMENT OF DR. R.A. MOORE, DIRECTOR, SOUTH DAKOTA AGRICULTURAL EXPERIMENT STATION

As Director of the South Dakota Agricultural Experiment Station, I support the national initiative for research on agriculture, food, and the environment.

We are being challenged by the agricultural competiveness of other nations. In most cases, this is a result of their greater emphasis on agricultural research. We must maintain a leadership role. We have a large land area and a climate that are both very suitable to agriculture. We have achieved great efficiencies in production, processing, packaging, and marketing of agricultural products, yet nearly 20% of our total work force is involved, thus making agriculture the Number 1 industry in America.

This remarkable efficiency has been achieved at some costs. Our environment is showing its fragility, our natural resources must receive better protection. We must be sure that our food will always be as nutritious and as safe as it can be.

For these reasons, we must inject new life into our agricultural and environmental research. For too long (some two decades) we in the state experiment stations have been struggling with only minimal federal funding to provide the research base for the expanding food and fiber needs of a country (and a world) with rising consumer expectations. I want to emphasize that the initiative requests new funding. We cannot subtract from other programs.

I also must emphasize that our state of South Dakota with its limited financial resources needs the stability of formula funding to keep our base programs intact.

However, we welcome the challenge of competitive research funding. We strongly support the manner of funding which this initiative will use. Strengthening grants will benefit small institutions such as ours. We believe we in South Dakota are in a strong position to make a major contribution.

We will use new tools--genetic engineering and biotechnology--to tap unused resources in South Dakota. South Dakota has 24 million acres of native grasslands. Numerous exotic species are abundant in these prairies. Many have characteristics that, if successfully incorporated into economic plants, would reduce our need for chemicals. With recombinant DNA we will move desirable traits from one species into others. We will work to transfer the weed resistance of western wheatgrass into other economic plants. The need for environmentally threatening chemicals will decline if we incorporate the natural insecticides found in the *Echinacea* species into sunflowers (South Dakota ranks 2nd in the U.S. in sunflower production). We will work in other ways to develop built-in mechanisms in both plants and animals to achieve resistance to various pests.

Such research relates directly to the national initiative. We in South Dakota are prepared to be competitive in these areas.

The National Academy of Sciences and National Research Council Board on Agriculture proposed the initiative in response to urgent needs. South Dakota State University was one of the first to join the Coalition for Advancement of Research on Agriculture, Food, and Environment (CARAFE).

As Director of the SDAES, I urge that funding be approved for $150 million in FY 1991 and that this be increased until the entire USDA program plan for the full $500 million is achieved.

The administration is to be commended for its support of the initiative at $100 million for FY 1991 and to increase funding by $50 million a year in each of the out years. This is, however, at the expense of two of the six areas recommended in the initiative. We must not exclude programs on markets and trade policy or on new products and new ways to add value to raw products. This is no time to stop short. All six program areas of the national initiative should be implemented.

We will continue to provide the most nutritious and the most healthful food in the world--and do it with efficiency, and we will protect our environment and conserve our natural resources--for ourselves and for the future.

Thank you.

SOUTHERN REGIONAL AQUACULTURE CENTER

STATEMENT OF DR. C.G. SHEPHERD, DIRECTOR

Mr. Chairman and Members
of the Subcommittee:

Thank you for the opportunity to offer testimony on behalf of the five Regional Aquaculture Centers. We sincerely appreciate the support this Subcommittee and other members of Congress provide these important aquaculture programs.

The Regional Aquaculture Centers for research, development, and demonstration were authorized by Title XIV of the Agriculture and Food Act of 1980 and the Food Security Act of 1985 (Subtitle L, Sec. 1475[d]). Center activities are cooperative with existing aquaculture programs of colleges and universities, State Departments of Agriculture, federal facilities, and non-profit private research institutions. The designated regions are Tropical/Subtropical, Western, Southern, North Central and Northeastern. The Centers encourage cooperative aquaculture research and extension educational programs having regional or national application to enhance viable and profitable commercial aquaculture production in the United States for the benefit of producers, consumers, and the American economy.

Under Section 1475[d] the authorized annual funding for the Centers was $7.5 million. The FY 90 appropriation was $3.75 million divided equally among the five Centers. We are requesting your support for funding these existing Centers at the full authorized level of $7.5 million.

The United States has a trade deficit of more than $6 billion for all fishery products, and aquaculture is the most rapidly growing segment of U.S. agriculture. U.S. private production is valued over $650 million. Per capita consumption of commercially produced and caught fish and shellfish has steadily increased for the past 25 years and was 15.0 pounds in 1988.

There is good potential for aquaculture expansion in the U.S. However, experience has shown that additional research and extension information will be essential for aquaculture to reach its full economic potential. A strong aquaculture industry will reduce our dependency on foreign production, provide alternative crops for our producers, improve our economy, and create new jobs. In 1989, on-farm value of catfish alone in the U.S. was greater than $330 million.

Efforts are being made to overcome constraints limiting growth of this complex industry. The segmented nature of previous programs and the lack of funding have been the greatest limitations. Significant future aquaculture development will result from the coordinated programs of the Regional Centers. User inputs are assured in these regional programs since industry representatives are involved in the decision-making processes.

The thirteen states and territories represented by the Southern Regional Aquaculture Center are Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, Puerto Rico, South Carolina, Tennessee, Texas, U.S. Virgin Islands and Virginia.

The following is a summary of ongoing programs for the Southern Region:

1. Analysis of Regional and National Markets for Aquacultural Products Produced for Food in the Southern Region.

   Scientists representing research institutions from four states are developing comprehensive marketing information on catfish and crawfish. Information has been obtained on consumer attitudes, awareness, usage and product suitability. Potentials and constraints for market expansion have been identified and are being evaluated, nationally and regionally. Several publications have already been completed from this project and more are forthcoming. There is a strong demand for these publications, and they will continue to be of considerable interest to producers, processors and other marketers of catfish, other finfish and crustaceans. Work on this project will be completed in 1990.

2. Preparation of Southern Regional Aquaculture Publications.

   Reference manuals and videos for production and marketing of aquaculture species adapted to the Southern Region were developed from this project. Eighteen scientists representing all states within the region are working cooperatively on numerous species adapted to the Southern Region. More than 40 publications and four videos dealing with catfish, crawfish, redfish, alligator, bass, forage species, baitfish and tilapia production have been completed. There is a very high demand for these materials which have been distributed nationwide. Interest has almost overwhelmed our ability to respond to these requests.

3. Performance of Aeration Systems for Channel Catfish, Crawfish, and Rainbow Trout Production.

The efficiency of paddlewheel aerators, water blenders and oxygen enrichment systems are evaluated for improved production of crawfish, catfish and trout. This project involves eight scientists in five states. Better aeration is associated with improved water quality and is of utmost importance to aquaculture producers throughout the nation. This work is not only beneficial to quality of production but also to improved environmental conditions.

4. Enhancement of the Immune Response to Edwardsiella ictaluri in Channel Catfish.

This project involves cooperative work among scientists in three states. The general objective is to determine if the immune response of stressed and unstressed channel catfish to the disease enteric septicemia (ESC) can be enhanced with the dietary additives vitamin E, selenium and levamisole. Results from the first year's work provided information to allow scientists to develop possible combinations of these additives to best enhance immune response and to evaluate their use as feed supplements for prevention of this disease. This work began in 1989 and will be completed in 1991.

5. Immunization of Channel Catfish.

This project involves cooperative work among scientists in three states with the general objective to develop specific immunogens and vaccination procedures to prevent enteric septicemia in catfish. Since no vaccines are available for warmwater fish, this work is needed to give aquaculturists tools to combat disease problems and increase production. These studies, which were initiated in 1989, will also be completed in 1991. Findings from the first year's work on this project are promising and have provided information to allow evaluation of four vaccination protocols during the upcoming year.

6. Influence of Nutrition on Body Composition and Sensory Quality of Farm Raised Catfish.

The effects of dietary digestible energy/protein ratio, finisher diets and feeding procedures on yield, dressing percentage, body fat, and subsequent frozen storage quality and profitability of catfish are being investigated. Research and extension scientists in ten states are cooperating on this project. Results from these studies will show the effects of feeding catfish various ratios of protein to energy, various fat sources or different feeding schedules on growth and body composition and storage quality of frozen catfish fillets. This three-year project continues through 1991.

7. Harvesting, Loading, and Grading Systems for Cultured Freshwater Finfishes and Crustaceans.

Scientists from six states are collaborating on this project which began in 1989. Existing and new types of equipment are evaluated for seining, loading and grading crawfish and catfish in terms of improved efficiency, reduced injury and physiological stress to the animals, increased economic benefits and improved product quality. A regional finfish harvesting demonstration was held at Cohutta, Georgia, in October, 1989, and a crawfish demonstration is scheduled in Louisiana in the fall of 1990. Improved harvesting and grading techniques will be extremely valuable to producers and consumers of aquaculture products. This work will also continue through 1991.

8. Develop a Statistical Data Collection System for Farm-raised Catfish and Other Aquaculture Products in the Southern Region.

Sources of data, types of data needed, analytical techniques and collection methods will be established for different segments of the aquaculture industry. Sources and kinds of information needed have been identified and plans are underway for cooperative State and Federal agencies to develop procedures to collect the statistical information desired. Work on this project should be completed in 1990.

More than 60 scientists, representing all states and territories within the Southern Region, have collaborated on the eight projects listed above.

With the Regional Aquaculture Center concept now operational, we have a structure in place to develop and coordinate aquaculture research and extension activities throughout the nation if adequate support is provided. The Center Directors and USDA representatives function as the National Coordinating Council for Aquaculture to accomplish this.

We respectfully request that funding at the authorized level of $7.5 million be provided these extremely important programs.

Additional written statements in support of our request are attached. Thank you for the opportunity to submit our testimony.

STATEMENT OF WALTER LANDRY, PRESIDENT, LOUISIANA AQUACULTURE ASSOCIATION

Thank you, Mr. Chairman, for the opportunity to present support testimony on behalf of the Regional Aquaculture Centers. My name is Walter Landry. I am a sugarcane farmer and an aquaculture producer. All my years have been spent in agriculture. In an effort to diversify my farming operation and to take advantage of the many natural areas available in Louisiana for aquaculture or water farming, I now produce crawfish, catfish, striped bass, redfish and shrimp. Aquaculture is an excellent diversification with agriculture.

As President of the Louisiana Aquaculture Association, I represent over 3000 producers of aquaculture products in Louisiana in 150,000 acres of controlled ponds and 300,000 acres of leased oyster bottoms. Aquaculture represents over $100 million to producers of crawfish, catfish, oysters, softshell crabs, softshell crawfish, alligators and other finfish in Louisiana.

In the past we have received invaluable production information from our universities and extension scientists. These people have provided facts on which we have made decisions and kept our operations profitable. A problem that you identified several years ago was that the information and research was spread over a large group of people, departments and agencies with little coordination between principal groups and agencies. In the short time since the formation of the Regional Aquaculture Centers in 1987, the Centers have effectively coordinated research and extension aquaculture programs throughout the nation. This has been a strong aspect of the program. The research and extension programs of the Centers have greatly impacted our aquaculture industries. For example, in a Southern Regional project both regional and national markets have been identified for aquacultural products (catfish and crawfish). These markets have given additional outlets for our products. The funding of marketing research has greatly assisted the producers and processors of aquaculture products.

Production research and extension demonstration projects have been conducted on aerators and water quality, diseases, nutrition and harvesting systems. All of these areas are critical areas if aquaculture is to continue to grow. The Regional Aquaculture Centers can consolidate, avoid duplication and involve all qualified regional scientists on the project. This is the way to do business - to consolidate scientists and budgets.

Scientists at 12 universities are developing educational, species-specific information in the form of printed materials and videos covering recommended production practices. This can save new producers money if they have all available updated information in a clear, neat package so that they may decide whether to produce a particular fish or shellfish.

From the viewpoint of producers, the structure of the Centers to have industry inputs into areas of research and extension projects is excellent. We face constantly changing problems in our products and must be able to determine priorities and help to rank research projects that will solve our industry problems. The Industry Advisory Committee is composed of representatives of major fish, shellfish and mollusks cultured in the region. Our cry for help in various areas of research has effectively been answered by the Regional Aquaculture Centers.

The aquaculture producers appreciate the help and support of this Subcommittee. The authorization of $7.5 million for five Regional Centers was only funded at $3.75 million in FY 90. We hope that you will provide the fully authorized $7.5 million for the five Regional Aquaculture Centers in the FY 91 budget. This budget is necessary for the growth of aquaculture and for public and private efforts to support aquaculture to continue.

Thank you for the opportunity you have given me to offer these comments of support for the Regional Aquaculture Centers.

STATEMENT OF HAROLD H. BENOIT, CHAIRMAN, LOUISIANA CRAWFISH PROMOTION AND RESEARCH BOARD

Mr. Chairman and Other Members of the Subcommittee:

We genuinely appreciate the opportunity to submit written testimony in support of the Regional Aquaculture Centers. I am Harold H. Benoit, a crawfish producer from Morse, Louisiana, and I also serve as Chairman of the Louisiana Crawfish Promotion and Research Board.

The Louisiana Crawfish Promotion and Research Board strongly supports the concept and structure of the Regional Aquaculture Centers. Title XIV of the Agriculture and Food Act of 1980 and the Food Security Act of 1985 authorized the establishment of regional aquaculture research, development and demonstration centers in the United States (Subtitle L, Section 1465[d]). The Centers encourage collaborative research and extension programs designed to compliment and strengthen existing programs provided by the Department of Agriculture and other public institutions. Members of the Louisiana Crawfish Promotion and Research Board have been impressed from the very beginning with the Center concept.

The authorized level of funding for the Regional Aquaculture Centers is $7.5 million. Actual annual funding to date, however, is well below the authorized level, with only $3.75 million appropriated in FY 90. We are requesting funding for the Regional Centers, which serve the entire United States, at the authorized $7.5 million level for FY 91.

The Louisiana crawfish industry, as we know it today, began about 30 years ago. There are now over 130,000 acres in crawfish production in Louisiana consisting of more than 2,500 individual ponds that produce 100 million pounds of crawfish annually. This industry continues to employ approximately 15,000 people in our state, and the on-farm value of production was approximately $60 million in 1987. Crawfish aquaculture now occurs to some extent in 25 states. As with most new agricultural crops, much help is needed in the areas of production, harvesting and marketing.

We would like to emphasize the fact that crawfish production costs, particularly harvesting costs, must be decreased to insure profitability to producers. Research and extension efforts to address these important areas are now underway through projects funded by the Southern Regional Aquaculture Center. Results from these projects will be extremely beneficial to our industry.

The U.S. imports 70% of the seafood it consumes. The crawfish industry is unique because we exported approximately three million pounds of crawfish to Europe last year. This export market represents only a very small part of our balance of trade, but is indicative of the potential for expanded exports for U.S. aquaculture products.

In 1988, three projects were initiated with support from the Southern Regional Aquaculture Center. These included much-needed work on marketing and economics of catfish and crawfish production and a study of pond aeration techniques for improved catfish, crawfish and trout production. A regional publications project also began in 1988, and so far over 40 publications and four videos on production practices for several aquaculture species in the Southern Region have been completed and distributed by extension aquaculture specialists. In 1989, five additional projects were initiated. These included research and extension work on catfish disease control, nutritional studies for improved quality and storage of catfish, and the development of improved techniques for harvesting and grading catfish and crawfish. Another project will address development of procedures for collecting statistical data urgently needed by the aquaculture industry for more effective and efficient production and marketing strategies.

Results from these projects should greatly enhance the position of aquaculture as an alternative agricultural crop, not only for the Southern Region but also for other regions of the country. Each project that is funded has input and review from research, extension and industry personnel so that practical, well-integrated programs, relevant to industry needs, are selected.

Again, we encourage funding at the authorized $7.5 million level for the five existing Regional Centers. We are excited about the results we have already seen from the Regional Center concept and know that the system works to address our industry problems.

Thank you for providing us the opportunity to submit this testimony on behalf of the Regional Aquaculture Centers.

STATEMENT OF DAVID PEARCE, PRESIDENT, PEARCE CATFISH FARM

Thank you, Mr. Chairman, for the opportunity to present testimony on behalf of the Regional Aquaculture Centers. My name is David Pearce. I am a fish farmer from Browns, Alabama, and have been raising fish since 1971. I serve on the Industry Advisory Council for the Southern Regional Aquaculture Center, and have also served as president of Catfish Farmers of America and Alabama Catfish Producers.

I have seen the aquaculture industry in this country grow from its infancy in the early 70's to the adolescent stage as we begin the 90's. Without the help of many research and extension specialists from around the country, aquaculture would still be trying to solve the problems which inhibited the growth of the industry in the early days. Although we are very thankful for this help, it was often duplicated and uncoordinated in its approach. The Regional Aquaculture Center concept, with its involvement of producers, researchers, and extension personnel from several states who are involved with different species, provides us an opportunity to change this fragmented approach. Not only will funds provided to the Centers be spent more productively, but a better understanding and working relationship between the research institutions in a region should ensure more effective use of research dollars from other sources as well. The Regional Aquaculture Center concept provides an excellent forum to identify, analyze, and solve the problems facing aquaculture today and in the future.

In summary, I would like to thank you for your support of aquaculture. With the continued and additional support of aquaculture research, the aquaculture industry is sure to mature to its maximum potential. We are requesting that the Regional Aquaculture Centers' funding be increased to the $7.5 million authorized level for FY 91.

Thank you for the opportunity to offer these comments.

STATEMENT OF LESTER W. MYERS, PRESIDENT AND GENERAL MANAGER, DELTA WESTERN, INC.

Thank you, Mr. Chairman, for the opportunity to present testimony on behalf of the Regional Aquaculture Centers. My name is Lester Myers. I serve as President and General Manager of Delta Western, Inc., Indianola, Mississippi, the largest catfish feed mill in the United States, and am also involved in catfish production near Inverness, Mississippi.

For the past three years, I have also served as Chairman of the Industry Advisory Council for the Southern Regional Aquaculture Center. Along with hundreds of aquaculture producers in the Mid-South, our Mississippi producers depend heavily on information from research and extension scientists throughout the country. This industry has reached its current status because of innovative efforts from these aquaculture scientists. Taken collectively, producers,

feed mills, processing plants and other segments comprise a catfish industry now valued at more than a billion dollars. My comments reflect the opinions of the increasing number of production and processing representatives who vitally need additional scientific information to keep this valuable industry viable and growing. U.S. aquaculture production can provide a significant portion of finfish and shellfish required by our country's consumers.

The Regional Aquaculture Center concept offers an effective and now proven organizational structure to coordinate research and extension efforts throughout the nation. Their programs have already provided very useful results. For example, the catfish industry, which constitutes approximately one-half of the private aquaculture production in the U.S., must deal with frequent fluctuations in supplies and market demands. A research bulletin identifying demographic and attitudinal characteristics of catfish consumers has just been published from one of the Southern Region's first projects. Additional and valuable information regarding seafood demand and usage is being prepared using results obtained from this marketing/economics study. Data collected from this project will be used by many segments of the aquaculture industry for years to come.

From another Southern Region project, scientists have completed more than 40 publications and four videos regarding production practices for several species common to our Region. Also, scientists from five states working on an aeration project are continuing to develop techniques to improve water quality for trout, crawfish and catfish production. In addition to major concerns for improved environmental conditions, maintaining good water quality is one of the most serious production problems facing aquaculture today.

Research and extension efforts have been most valuable to aquaculture. Even so, significant problems still face this capital-intensive industry. Techniques for improved nutrition, reduced production costs, control of off-flavor, and disease and parasite problems are critically needed in order to maintain the high quality of cultured aquacultural products. Prevention of pollution and contamination in aquaculture environments dictate a continuous need for effluent quality control.

One of the major benefits we continue to see from programs of the Regional Centers is the excellent opportunity for industry inputs in determining priorities and helping select projects to solve our problems. In addition to producers, there are representatives from feed mills, processing plants, financial institutions, and State Departments of Agriculture serving on the Industry Advisory Councils. These segments comprise the backbone of the aquaculture industry.

The 1988 on-farm value of U.S. private aquaculture production was greater than $650 million, and with proper technological information, has excellent potential for additional growth. Future success of aquaculture depends on continued support of the programs described above. Scientists must continue to develop new techniques and provide additional information to help solve the ever-increasing problems that develop in aquaculture production, processing and marketing.

In summary, those of us representing the aquaculture industry continue to feel that significant benefits have already occurred from these Regional Center programs. We are also convinced that additional valuable information will be forthcoming from these programs if increased funding is made available. We commend your foresight in helping establish these Centers and genuinely appreciate this and other valuable support you have previously provided our industry.

The authorized level of funding for the five Regional Centers is $7.5 million. The total amount appropriated for the Centers for FY 90 was $3.75 million or $750,000 per Region. We strongly request your consideration of the 1991 FY budget to provide the $7.5 million full authorized level of funding for the five Regional Aquaculture Centers.

Again, we appreciate the opportunity to offer these comments of support.

Thank you.

TEHACHAPI-CUMMINGS COUNTY WATER DISTRICT

STATEMENT OF KARL M. BACKES, PRESIDENT

Mr. Chairman:

My name is Karl M. Backes, and I am president of the Tehachapi-Cummings County Water District in Kern County, California. The District is the leading local sponsor for the Tehachapi Watershed Project, which was authorized and is being built under the P.L. 566 Small Watershed Act program. Other local sponsors for the project are the Tehachapi Resource Conservation District, the City of Tehachapi and the Kern County Water Agency.

Our FY 91 funding request of $1.1 million will be used to finish the last component of the project, the Blackburn Diversion Unit. This will complete the Project and provide economic flood and soil erosion control for about 3,000 acres of prime farmlands and the City of Tehachapi. The total federal investment in this project will be about $12.3 million, while the District and other non-federal sponsors will have invested about $1 million, and of course will assume operation and maintenance costs.

I would like to take this opportunity to tell you that your active support for national small watershed protection programs has meant a great deal to us, especially over the last few years of drastic funding cutbacks that have been imposed throughout the nation. These funding shortages have resulted in costly delays and extended construction schedules for almost all the small watershed projects in the country, but California has been hit disproportionately hard.

For the last few years, the California Soil Conservation Service Office has received little more than half of the actual amount it really needs to maintain an efficient construction schedule for its small watershed projects. The Tehachapi Project, for example, was originally scheduled for completion last year. Other projects that are sorely needed in other parts of the state are looking at 10- to 15-year construction schedules. These are projects that should take no more than four or five years to complete.

To put California's SCS budget needs in perspective, it is important to remember that California alone contributes about 11 percent of the total national agricultural economy. However, the total California SCS budget allocation over the last few years has been about 2 percent of the total national SCS budget.

I understand that it is presently proposed to allocate $16 million for California in FY 91. This amount for California's entire SCS needs, which include more than the Small Watershed Act projects which I am specifically concerned about here today, is simply not enough.

The California Association of Resource Conservation Districts and California project sponsors are requesting that Congress add $15 million to the national SCS budget to increase the California allocation to $31 million in order to meet the state's minimum reasonable needs for soil conservation and resource protection. This is a significant increase, but it is still not in proportion to California's contribution to the nation's agricultural economy. I urge your support for this request.

Mr. Chairman, I sincerely hope that this will be our last request for funding for the Tehachapi Watershed Project, and that next year you will be able to point to it as another beneficial and cost-effective example of the small watershed program.

TEXAS A&M UNIVERSITY SYSTEM

STATEMENT OF TIMOTHY L. SHAUNTY, ASSISTANT DEPUTY CHANCELLOR FOR AGRICULTURE

MR. CHAIRMAN, MY NAME IS TIM SHAUNTY AND I AM THE ASSISTANT DEPUTY CHANCELLOR FOR THE AGRICULTURAL PROGRAMS FOR THE TEXAS A&M UNIVERSITY SYSTEM. MY PURPOSE TODAY IS TO REQUEST ADDITIONAL SUPPORT FOR CONSTRUCTION OF A FACILITY TO HOUSE THE INSTITUTE OF BIOSCIENCES AND TECHNOLOGY, A COMPONENT OF TEXAS A&M UNIVERSITY THAT WILL BE LOCATED IN THE TEXAS MEDICAL CENTER AT HOUSTON.

I WOULD LIKE TO FIRST EXPRESS MY APPRECIATION FOR THE PREVIOUS SUPPORT THAT CONGRESS HAS PROVIDED, $50,000 IN FY88 FOR FEASIBILITY STUDY, $1.25 MILLION IN FY89 FOR CONSTRUCTION, AND $3 MILLION IN FY90 FOR CONSTRUCTION. OUR INITIAL REQUEST WAS FOR $12.5 MILLION IN MATCHING FUNDS RESULTING IN A REQUEST THIS YEAR FOR THE $8.25 MILLION REMAINING.

SINCE THE GROUND BREAKING IN JANUARY OF 1989, THE FACILITY HAS PROGRESSED TO WHERE "TOPPING OUT" CEREMONIES WILL OCCUR THIS FRIDAY, COMMEMORATING THE CREATION OF THE SKELETON STRUCTURE OF THE ELEVEN STORY BUILDING. WE HAVE BEEN EXTREMELY AGGRESSIVE IN THE PRIVATE CAPITAL CAMPAIGNS EFFORT TO SUPPORT THE INSTITUTE OF BIOSCIENCES AND TECHNOLOGY. AT THIS TIME WE HAVE APPROXIMATELY $17 MILLION PLEDGED OVER THE NEXT FIVE YEARS. OF THIS SUM, APPROXIMATELY $10 MILLION IS FOR CONSTRUCTION WITH THE REMAINING BEING DESIGNATED FOR ENDOWMENT SUPPORT OF THE RESEARCH PROGRAMS.

THE TEXAS MEDICAL CENTER, A WORLD LEADING RESEARCH CENTER WITH OVER $200 MILLION IN SPONSORED RESEARCH ANNUALLY, HAS BEEN A WILLING PARTNER IN THE PROGRAM DEVELOPMENT OF THE INSTITUTE OF BIOSCIENCES AND TECHNOLOGY. THIS INSTITUTE IS DESIGNED TO BRING THE RESOURCES OF THE TEXAS A&M UNIVERSITY SYSTEM INTO PLAY WITH THE EXISTING TEXAS MEDICAL CENTER. IT IS A UNIQUE OPPORTUNITY TO MELD AGRICULTURE AND VETERINARY SCIENCES WITH THE HUMAN RESEARCH EFFORTS OF THE TEXAS MEDICAL CENTER. AS HAS BEEN PREVIOUSLY PRESENTED, THE COLLABORATIVE EFFORTS BETWEEN THE VARIOUS INSTITUTIONS OF THE TEXAS MEDICAL CENTER AND THE TEXAS A&M UNIVERSITY SYSTEM WILL BE SIGNIFICANTLY ENHANCED BY THE PHYSICAL LOCATION OF THE STRUCTURE IN HOUSTON. SPECIFICALLY, THE FOLLOWING MAJOR INSTITUTIONS HAVE BEEN IDENTIFIED AND HAVE PARTICIPATED IN THE PLANNING OF COLLABORATIVE PROGRAMS:

(1) THE UNIVERSITY OF TEXAS SYSTEM CANCER CENTER, MD ANDERSON HOSPITAL AND TUMOR INSTITUTE
(2) THE UNIVERSITY OF TEXAS HEALTH SCIENCE CENTER IN HOUSTON
(3) BAYLOR COLLEGE OF MEDICINE
(4) RICE UNIVERSITY
(5) UNIVERSITY OF HOUSTON
(6) TEXAS SOUTHERN UNIVERSITY
(7) THE USDA CHILDRENS NUTRITION RESEARCH CENTER.

THE STATE LEGISLATURE OF TEXAS HAS PROVIDED OPERATING FUNDS FOR THE INSTITUTE OF BIOSCIENCES AT THE RATE OF $7.5 MILLION OVER THE CURRENT BIENNIUM. THIS COMBINATION OF STATE FUNDS FOR OPERATION AND PRIVATE SOURCE ENDOWMENTS FOR ENHANCEMENT PROGRAMS AND MATCHING CONSTRUCTION COSTS, ALLOWS US TO ASK FOR A NONRECURRING, ONE TIME REQUEST FOR FACILITY CONSTRUCTION FROM THE FEDERAL GOVERNMENT.

THE INSTITUTE OF BIOSCIENCES AND TECHNOLOGY, WITH ITS INITIAL FOCUS ON COMPARATIVE ANIMAL GENETICS AND ANIMAL BIOTECHNOLOGY, WILL PLAY A MAJOR ROLE IN SUPPLYING THE CRITICAL LINK BETWEEN HUMAN AND ANIMAL GENETICS. THESE PROGRAMS, ALONG WITH EXISTING PROGRAMS OF THE OTHER INSTITUTIONS IN THE TEXAS MEDICAL CENTER, WILL HELP CREATE ONE OF THE NATIONS LEADING CENTERS FOR BIOTECHNOLOGY RESEARCH AND COMPARATIVE MAPPING OF HUMAN AND ANIMAL GENOMES, AN AREA OF MAJOR EMPHASIS IN MANY OF THE RESEARCH COMPONENTS OF THE FEDERAL GOVERNMENT. THESE ACTIVITIES AT THE INSTITUTE OF BIOSCIENCE AND TECHNOLOGY WILL PROVIDE THE BASIS FOR THE DEVELOPMENT OF NEW PRODUCTS AND SERVICES IN THE AGRICULTURAL, PHARMACEUTICAL, CHEMICAL, MEDICAL, AND FOOD INDUSTRIES.

THE INITIAL PROGRAMS OF THE INSTITUTE OF BIOSCIENCES AND TECHNOLOGY WILL FOCUS ON THE FOLLOWING PROGRAMS:

(1) A CENTER FOR ANIMAL BIOTECHNOLOGY
(2) A CENTER FOR COMPARATIVE ANIMAL GENETICS
(3) A CENTER FOR ADVANCED INVERTEBRATE MOLECULAR SCIENCES
(4) A PROGRAM IN PROTEIN ENGINEERING
(5) A PROGRAM IN HUMAN NUTRITION
(6) A PROGRAM IN ANIMAL MODELS FOR HUMAN DISEASES

YOU HAVE HEARD FROM MANY SOURCES THAT THE NEW SCIENCES AND PROGRAMS DEVELOPED THROUGH THE UTILIZATION OF BIOTECHNOLOGY HAS BECOME ONE OF THE TOP SCIENTIFIC PRIORITIES OF THE FEDERAL GOVERNMENT. SUPPORT IN THIS AREA COMES FROM THE PRESIDENT, CONGRESS, USDA, AND THE NATIONAL INSTITUTE OF HEALTH IN DEVELOPING TO A MAXIMUM THE BENEFITS OF THE RESULTS OF BIOTECHNOLOGY RESEARCH. THE IMPACT OF BIOTECHNOLOGY WILL STRETCH FROM MEDICINE TO AGRICULTURE TO HAZARDOUS WASTE MANAGEMENT AND, SIMILAR TO THE SPIN OFFS OF THE NASA TECHNOLOGY, TO IMPLICATIONS WE HAVE NOT EVEN CONCEIVED OF TODAY. WE BELIEVE VERY STRONGLY THAT THE INSTITUTE OF BIOSCIENCES AND TECHNOLOGY WILL HELP CHART THE COURSE FROM BIOTECHNOLOGY'S PROMISES TO ITS REALITIES. MR. CHAIRMAN, I APPRECIATE THE OPPORTUNITY TO APPEAR BEFORE THIS COMMITTEE TODAY IN SUPPORT OF THE REQUEST FOR CONSTRUCTION FUNDING OF $8.25 MILLION TO SUPPORT THE INSTITUTE OF BIOSCIENCES AND TECHNOLOGY WITHIN THE TEXAS A&M UNIVERSITY SYSTEM. WE HOPE THAT YOU WILL LOOK FAVORABLY ON THIS REQUEST AND STAND READY TO ASSIST IN ANY WAY POSSIBLE.

THE PROGRAMS FROM THE TEXAS A&M UNIVERSITY SYSTEM THAT WILL INITIALLY BE INVOLVED IN THE INSTITUTE OF BIOSCIENCES AND TECHNOLOGY COME FROM THE COLLEGES OF AGRICULTURE AND LIFE SCIENCES, VETERINARY MEDICINE, SCIENCES, AND ENGINEERING FROM TEXAS A&M UNIVERSITY. IN ADDITION, THE TEXAS AGRICULTURAL EXPERIMENT STATION WILL HAVE A SIGNIFICANT RESEARCH INVESTMENT IN THE INSTITUTE OF BIOSCIENCES AND TECHNOLOGY ALONG WITH TEXAS ENGINEERING EXPERIMENT STATION. THE PUBLIC EDUCATION AND TECHNOLOGY TRANSFER COMPONENT OF THE INSTITUTE WILL INCLUDE PARTICIPATION OF THE TEXAS AGRICULTURAL EXTENSION SERVICE.

AS FORMAL COLLABORATION EFFORTS ARE IDENTIFIED AND AGREED UPON, RESOURCES OF THE TEXAS A&M UNIVERSITY SYSTEM, HAVE BEEN PLEDGED TO INSURE THAT THE PROGRAMS ARE SUPPORTED.

WHEN THE INSTITUTE OF BIOSCIENCES AND TECHNOLOGY WAS INITIALLY CONCEIVED, A SCIENTIFIC ADVISORY BOARD OF DISTINGUISHED SCIENTISTS AND RESEARCH ADMINISTRATORS FROM ACROSS THE COUNTRY WERE BROUGHT TOGETHER TO HELP FORMULATE BROAD GOALS AND OBJECTIVES OF THE INSTITUTE. SPECIFIC PROGRAMS THAT HAVE BEEN IDENTIFIED AND REMAIN AS THE BASIC GOALS OF THE INSTITUTE ARE AS FOLLOWS:

(1) STRENGTHEN ON-GOING COLLABORATIVE RESEARCH BETWEEN SCIENTISTS IN AGRICULTURE, AND MEDICINE
(2) TO STIMULATE NEW RESEARCH INITIATIVES AND ALLOW NATIONAL COLLABORATION BY RECRUITING KEY SCIENTISTS ENGAGED IN MULTIDISCIPLINARY RESEARCH FOR BOTH THE MEDICAL COMMUNITY AND AGRICULTURE
(3) PROVIDE A FORUM FOR EXCHANGING IDEAS BETWEEN THE AGRICULTURAL AND MEDICAL RESEARCH COMMUNITIES
(4) ASSIST IN THE TECHNOLOGY TRANSFER FROM THE LABORATORY TO THE MARKET PLACE.

WHILE THIS CENTER WILL BE A COMPONENT OF THE TEXAS A&M UNIVERSITY SYSTEM AND IS LOCATED IN HOUSTON WITHIN THE TEXAS MEDICAL CENTER, OUR GOAL IN ESTABLISHING THE INSTITUTE IS TO INSURE THAT IT BECOMES A NATIONAL RESOURCE AND CAPITALIZE ON THE OPPORTUNITIES CURRENTLY AVAILABLE THROUGH THE BREAKTHROUGHS IN BASIC BIOLOGY. WE BELIEVE THIS NATIONAL RESOURCE WILL BE OF INESTIMABLE VALUE IN A VERY SHORT TIME BASED ON THE FOLLOWING:

(1) THE GROWING PROBLEM OF METABOLIC AND DIET RELATED DISEASE ALONG WITH THE INCREASING COST OF THIS PROBLEM
(2) THE OPPORTUNITIES FOR SHARING COMPLIMENTARY SCIENTIFIC CAPABILITY BETWEEN MEDICAL, AGRICULTURAL, AND ENGINEERING INSTITUTIONS TO PROVIDE CREATIVE SOLUTIONS TO THESE PROBLEMS.
(3) THE RESULTING BENEFIT TO THE U.S. ECONOMY THROUGH NEW BIOTECHNOLOGY INDUSTRIES THAT WILL BE CREATED AS A RESULT OF THIS INVESTMENT IN RESEARCH.

PROJECT/PROGRAM: THE INSTITUTE FOR BIOSCIENCES AND TECHNOLOGY, TEXAS A&M UNIVERSITY

ACTION PROPOSED: CONSTRUCTION FUNDING UNDER CSRS FACILITIES BUDGET OF $8.25 MILLION

SUMMARY: THE INSTITUTE OF BIOSCIENCES AND TECHNOLOGY WILL BE A RESEARCH FACILITY OF TEXAS A&M UNIVERSITY LOCATED IN THE TEXAS MEDICAL CENTER IN HOUSTON, TEXAS DESIGNED TO BRING ABOUT COLLABORATIVE RESEARCH BETWEEN AGRICULTURAL AND MEDICAL RESEARCH. THE FACILITY WILL COST APPROXIMATELY $25 MILLION AND THIS TESTIMONY IS IN SUPPORT OF A REQUEST OF $8.25 MILLION. PREVIOUS APPROPRIATIONS OF APPROXIMATELY $4.25 MILLION HAVE BEEN RECEIVED AND THE REMAINING $12.5 MILLION HAS BEEN COMMITTED FROM THE TEXAS A&M UNIVERSITY SYSTEM. IN ADDITION, THE STATE OF TEXAS HAS APPROPRIATED $7.5 MILLION THIS BIENNIUM FOR THE OPERATION AND A PRIVATE CAMPAIGN HAS RAISED $17 MILLION TO SUPPORT THE INSTITUTE.

WITNESSES: TIMOTHY L. SHAUNTY, ASSISTANT DEPUTY CHANCELLOR FOR AGRICULTURE, THE TEXAS A&M UNIVERSITY SYSTEM

TEXAS TECH UNIVERSITY COLLEGE OF AGRICULTURAL SCIENCES

STATEMENT OF DR. SAM E. CURL, DEAN

SUMMARY

REQUEST FOR ENHANCED PROGRAM SUPPORT, NECESSARY FUNDING FOR COMPLETION OF LABORATORY PLANNING, AND $8.25M IN PHASE II CONSTRUCTION FUNDS FOR THE USDA/ARS PLANT STRESS AND WATER CONSERVATION LABORATORY AUTHORIZED IN 1988 BY P.L. 100-339. The USDA/ARS PROGRAM AND LABORATORY ARE LOCATED AT LUBBOCK, TEXAS IN COOPERATION WITH TEXAS TECH UNIVERSITY AND THE TEXAS AGRICULTURAL EXPERIMENT STATION.

SPECIFIC ACTION REQUESTED OF THE COMMITTEE: It is requested that Congress appropriate $8.25M to fund the construction of Phase II of the Plant Stress and Water Conservation Laboratory authorized by the 100TH CONGRESS through PUBLIC LAW 100-339. The total cost of the laboratory is estimated at $17M. Construction funds of $500,000 were appropriated for the current fiscal year for Phase I of Laboratory Construction. We will request funds to complete construction of the laboratory from the FY 1992 budget. Completion of architectural plans for the laboratory will be achieved through use of designated-unspent funds ($413,000) previously appropriated for laboratory planning together with an additional $600,000 of planning funds herein requested. The building will be constructed on the Texas Tech University campus on a 50 acre tract of land leased to USDA/ARS by the Texas Tech University Board of Regents.

A request for a total plant stress and water conservation research appropriation of $1.85M is also made to fund the USDA/ARS program budget at Lubbock for FY 1991. This request includes increased research funding of $250,000 to enhance the molecular biology research program linking existing plant genetics and breeding experiments with the newest molecular laboratory biotechnologies. The expanded research will focus on understanding the genetic control of plant mechanisms which facilitate drought and heat tolerance in crop plants.

JUSTIFICATION: The action of the federal government in 1988 through PUBLIC LAW 100-339 authorizing a plant stress and water conservation research laboratory and program at Lubbock, Texas was timely and will have a substantial impact on food production and environmental quality for decades to come. The Greenhouse Effect resulting from increased atmospheric carbon dioxide, Global Warming induced climatic changes, and the extensive drought of the summer of 1988 are ready examples of the fragility of our managed and natural ecosystems, and the potential for reduction in food and fiber quantity from even modest changes in weather patterns.

The formal plant stress and water conservation program was initiated in 1979 after 20 years of feasibility studies and planning by agencies of the federal government. The federal government through USDA/ARS, and the State of Texas through Texas Tech University and the Texas Agricultural Experiment Station, have put a comprehensive-integrated program in place over the last 11 years in which 20 senior scientists are today working to develop improved crop plants and planting systems that will provide for economically optimal crop production under variable-extreme environmental conditions. Scientists with expertise in the broad areas of genetics, breeding and molecular biology; biochemistry and physiology; and climatology, soil science and systems research have research programs poised for the challenges of the predicted climatic changes forecast within the next several decades. This program will be greatly enhanced, and its potential fulfilled, with the construction of a laboratory on the Texas Tech campus in conjunction with a broad array of established basic sciences. Additional program dollars will fill existing gaps in the continuum of technology transfer from laboratory molecular technologies to field applications of genetically modified plants exhibiting improved stress tolerance.

INTRODUCTION

Mr. Chairman, I greatly appreciate the opportunity to appear before the Committee today to request that Congress appropriate $8.25M to fund construction of Phase II of the USDA/ARS Plant Stress and Water Conservation Laboratory at Lubbock, Texas authorized by the 100TH CONGRESS through PUBLIC LAW 100-339, and $600,000 to facilitate completion of laboratory planning. We are also requesting that Congress appropriate $250,000 to enhance the molecular biology research program linking existing plant genetics and breeding experiments with the newest molecular laboratory biotechnologies. The expanded research will focus on understanding the genetic control of plant mechanisms which facilitate drought and heat tolerance in crop plants. This vital research is encompassed in the comprehensive nationwide research mission of the U. S. Department of Agriculture/Agricultural Research Service, and the research program implements the recommendations of the Plant Stress and Soil Water Conservation feasibility study prepared by the USDA/ARS.

The action of the Federal Government in 1988 through PUBLIC LAW 100-339 authorizing a plant stress and water conservation research laboratory and program at Lubbock, Texas was timely and will have a substantial impact on food production and environmental quality for decades to come. The Greenhouse Effect resulting from increased atmospheric carbon dioxide and other gases, Global Warming induced climatic changes, and the extensive drought of the summer of 1988 are ready examples of the fragility of our managed and natural ecosystems, and the potential for reduction in food and fiber quantity from even modest changes in weather patterns.

The background setting for the problem which the research program addresses is found in Senate Document 59, the feasibility study conducted by the Science and Education Administration of USDA in 1977, and the statement of Texas Tech University submitted for the record before this committee on March 26, 1979. We will not repeat this information, as we believe the record is replete with scientific and economic documentation prepared by a select committee which describes the conditions of the region and the research required to seek viable solutions to a complex set of critical problems confronting the areas of agriculture, natural resource conservation and environmental protection. The need for a comprehensive, multidisciplinary, long-term basic science research program is obvious. Texas Tech University has taken the lead in the development of a cooperative research program with the USDA/ARS, the Texas Agricultural Experiment Station, colleges, universities, and federal laboratories throughout the region, agricultural producers, the agribusiness industry, and private research organizations.

BACKGROUND

The key planning events involving Texas Tech University which have taken place in conjunction with the development of the research program and laboratory to date are as follows:

1975-1976: Preliminary discussions with officials of the U. S. Department of Agriculture and members of the Congress.

1977-1978: Congress appropriated $100,000 for a feasibility study. The study team concluded that there was an urgent need for a plant stress and water conservation research program and that Lubbock, Texas, was the ideal location for a laboratory facility. A later decision to locate the facility on the campus of Texas Tech University, in conjunction with the College of Agricultural Sciences, finalized the first major step in the development of the program.

1978-1979: Congress appropriated $800,000 for the preparation of a research program plan and architectural and engineering plans for the appropriate laboratory in which to carry out the proposed research. The Science and Education Administration in August, 1979, transferred a USDA/ARS scientist (plant physiologist) to Lubbock, Texas to serve as a cooperative scientist working with Texas Tech and Texas Agricultural Experiment Station scientists on environmental stress mechanisms in sorghum and cotton. Texas Tech provides office and laboratory space, use of the library, computer, and other University facilities as well as extending full faculty privileges to the USDA/ARS scientists.

1983-84: Congress appropriated $500,000 for completion of the architectural and engineering plans.

1984-85: Congress appropriated an additional $150,000 for support of the ongoing cooperative research program, bringing the total annual funding for the research program to $900,000 ($525,000 in Base Funds and $375,000 in Formal Budget Funds).

1985-1986: Congress appropriated an additional $250,000 for support of the ongoing cooperative research program, bringing the total annual funding for the research program to $1,150,000 ($525,000 in Base Funds and $625,000 in Formal Budget Funds).

1986-1987: Congress appropriated $1,150,00 ($525,000 in Base Funds and $625,000 in Formal Budget Funds).

1987-1988: Congress appropriated an additional $250,000 for support of the ongoing cooperative research program, bringing the total annual program funding to $1,400,000 ($525,000 in Base Funds and $875,000 in Formal Budget Funds).

1988-1989: Congress passed and the President signed into law PUBLIC LAW 100-339 which authorizes construction of the Plant Stress and Water Conservation Laboratory on the campus of Texas Tech University.

Funding of the Cooperative Plant Stress and Water Conservation Research Program

Year	Base Funds	Formal Budget Funds	Congressional Add-On Funds	Total Funds
1980	-0-	-0-	$200,000	$ 200,000
1981	$200,000	$100,000	$100,000	$ 400,000
1982	$400,000	$ 50,000	-0-	$ 450,000
1983	$525,000	$225,000	-0-	$ 750,000
1984	$525,000	$225,000	-0-	$ 750,000
1985	$525,000	$225,000	$150,000	$ 900,000
1986	$525,000	$375,000	$250,000	$1,150,000
1987	$525,000	$375,000	$250,000	$1,150,000
1988	$525,000	$625,000	$250,000	$1,400,000
1989	$525,000	$875,000	-0-	$1,400,000
1990	$725,000	$875,000	-0-	$1,600,000
Request 1991	$725,000	$875,000	$250,000	$1,850,000

RESEARCH MISSION AND ACTIVITY TO DATE

The plant stress and water conservation research program is committed to understanding the basic principles of plant growth and development under conditions of thermal and water stress, and to use this knowledge to produce new crop varieties and management systems that minimize the impact of climatic extremes. More specifically, the program determines avoidance, tolerance, and survival mechanisms associated with plant growth and development under water and thermal stress; it relates these mechanisms to the dynamics of water and nutrient transport within the soil-plant-atmosphere continuum; it defines the extent of genetic variability of the mechanisms; and it seeks to exploit the latest techniques of molecular biology to find and/or create unique crop germplasm which is genetically stress resistant.

Research is designed to support the goals of the USDA/ARS by:

- Strongly interfacing the results of the Plant Stress and Water Conservation (PSWC) program with other state and federal research programs, and with agricultural industries.
- Conducting the PSWC program in concert with the national USDA/ARS plan, and under the overall leadership of the national program staff of USDA/ARS.
- Concentrating research efforts toward improving the efficiency of crop production while conserving natural resources and maintaining water quality.

Three research thrusts support the program mission in accordance with plans established by a select committee at the time the program was initially conceptualized, and subsequently approved by the agencies committed to conducting the research. Research is being conducted in genetics, breeding and molecular biology; biochemistry and physiology; and climatology, soil science, and cropping systems.

Genetics, Breeding and Molecular Biology. Emphasis is on the evaluation and improvement of the cotton, wheat, sorghum, and forage genomes for improved water use efficiency and tolerance of drought and extreme thermal conditions. Cotton, sorghum and wheat regeneration from cell suspension cultures provides the basis for molecular-genetic manipulations of stress tolerant characteristics. Transgenic cotton plants, with bacterial marker genes have been regenerated to test the adequacy of the cotton transformation system. Numerous cell culture systems, and plants regenerated from them, are being utilized in the search for modified germplasm exhibiting tolerance for extreme environments. Variability in the production of heat shock proteins facilitating thermal tolerance has been identified as a genetically controlled characteristic in wheat, sorghum and cotton plants in the field, and cells in the test tube. Enhanced rooting systems of selected crops have been identified and tested in various newly modified and traditional production systems. Studies on guar and sunflowers have shown their adaptation to a wide range of climatic extremes. Genetic differences in the photosynthetic rates of sorghum have been identified and related to improvements in water use efficiency. Seedling establishment has been shown to be associated with a root growth-temperature interaction in forage species.

Biochemistry and Physiology. Studies in this area have defined the impact of enzyme kinetics as related to thermal stress and the synthesis of heat shock proteins. Researchers have shown that enzyme efficiency is related to the indigenous origin of crop germplasm, that crops have a very narrow temperature optimum (a "Thermal Kinetic Window"), and that plants use the physiological process of transpiration to maintain these desirable temperatures.

Climatology, Soil Science, and Cropping Systems. Technology has been developed to quantify root systems under field conditions. Research has shown that the area-wide cotton yield decline in the Southern High Plains is associated with reduced fertility and irrigation. A model has been developed and tested which separates plant transpiration from soil water evaporation. A cotton production system that integrates water, fertility, variety, and plant spacing has been developed and shown to improve cotton yields. Forage species and production systems have been identified that are highly adapted to semi-arid climates.

STATEMENT OF HON. STROM THURMOND, U.S. SENATOR FROM SOUTH CAROLINA

MR. CHAIRMAN:

I would like to thank you and the other members of the Senate Appropriations Subcommittee on Agriculture, Rural Development and Related Agencies for the opportunity to submit this testimony.

Mr. Chairman, as we all know the Federal Budget for fiscal year 1991 is very tight. Therefore, we must seek to allocate funds to those areas which yield the greatest returns. Agricultural research has helped our farmers become more competitive and productive than other countries. I am particularly interested in a number of very important research programs and wish to emphasize the need for their funding. Following is a table which summarizes funding requests for Fiscal Year 1991 and a brief outline of each research project.

	1990 Funding	1991 Proposed
PREVIOUSLY FUNDED PROGRAMS		
Alternative Cropping Systems:	$270,180	$280,000
Peach Tree Short Life:	$180,120	$200,000
USDA/ARS Vegetable Research Facility Charleston, South Carolina:	$1,015,000	$18,000,000
NEW FUNDING REQUESTS		
International Trade Center:	$0	$1,200,000
Pest Control Alternatives:	$0	$750,000

ALTERNATIVE CROPPING SYSTEMS

Mr. Chairman, the first of these high-priority programs is the "Agricultural Adjustment in the Southeast through Alternative Cropping Systems Program," being conducted jointly by Clemson University, the University of Georgia, and North Carolina State University.

For the past six years, these three universities have been conducting an innovative research program to improve the marketing and production practices of farmers. This program is aimed at increasing and stabilizing farm income in the Southeast through the development of alternative crops suitable to that region of the country. The Agricultural Economics and Horticulture departments of the universities involved work together to define "market windows" for certain crops. These "windows" help increase revenue to the farmers while providing markets with healthy commodities. This year the coordinators of this project held a public conference to discuss some of the results of their studies. In attendance at this meeting were vegetable growers, brokers, buyers as well as representatives of major grocery store chains. It is expected that many farmers made business contacts which will aid the growers in marketing vegetables. Accordingly, I request that the Subcommittee appropriate $280,000 to continue this important program.

PEACH TREE SHORT LIFE

The "Peach Tree Short Life Research Program" is another example of our use of science to improve agriculture. This program is responsible for investigating the causes of premature death of young peach trees. This short life is caused by damage primarily inflicted on the root system by various nematodes. Since DBCP was banned in 1979 as a soil fumigant, no effective replacement has been developed. This research has identified production practices which lessen the incidence of the harmful nematode, but further work is needed. If funding is continued, future research will concentrate on identifying the genes in the rootstock which are resistant to nematode infestation and transferring these genes to a commonly used rootstock in the peach industry. Mr. Chairman, I respectfully request $200,000 for this research project to continue.

USDA/ARS VEGETABLE RESEARCH CENTER

The USDA/ARS has been conducting vegetable research at the Charleston, South Carolina facility for over 50 years. Two years ago $50,000 was appropriated to conduct a feasibility study. This study found that the existing facilities are inadequate to meet the current or future vegetable research needs. The House Appropriations Committee Report for Fiscal year 1988 stated that:

"The existing facilities are occupied at 133 percent of designed capacity and are costly to maintain and substandard for scientific purposes." It further states that a safety hazard exists in moving both personnel and equipment across an extremely busy highway (U.S. 17).

In the Fiscal Year 1990 budget, $1.015 million dollars was appropriated for architectural and engineering plans. The need for this research facility has been established. Clemson University has established that $18 million is needed to finish this project. I respectfully request that the total amount be included in the Fiscal Year 1991 budget.

INTERNATIONAL TRADE DEVELOPMENT CENTER

International trade is crucial to the agricultural and rural communities of the South. Trade of food, fiber, and natural resources is important to this region, and marketing changes in these products dramatically affect the Southern economy. During the 1970s, non-metropolitan counties in the region increased imports due to favorable trade conditions, but when prices declined in the early 1980s the most severe damage occurred in the South. Between 1982 and 1987, for every one acre taken out of production by Midwestern farmers, the South lost two acres. This has caused hardships for agri-businesses and rural communities. Once again, we need to develop our technology to cope with international market fluctuations and to expand our market share.

In order to aid in the development of this essential technology, it has been proposed that an "International Trade Development Center" be established. The primary purpose of the "Trade Center" will be to increase the international trade potential of businesses, especially small to medium-size firms. These firms figure prominently in the continued economic growth of Southern states. Trade Center efforts will include research on critically needed information about new markets and products, trade barriers, foreign cultures as well as export shipping of commodities.

This project is a joint effort among the College of Charleston, Clemson University, South Carolina State College, and USC-Coastal Carolina. Major commodities and products included in this program will be southern pine, soft red winter wheat, selected fruits and vegetables, processed foods, as well as cotton. Extension outreach programs will be developed and utilized to inform businesses of the opportunities in international trade. There will be a close working relationship with the S.C. Ports Authority, the State Development Board and the South Carolina Department of Agriculture to aid in the success of this project.

The broad base of university, college, and government programs represented by this Center will be the key to its success and long-term viability. Mr. Chairman, while this program would be conducted in South Carolina the benefits would extend to all of the Southern states. According to the researchers proposing this project, $1.2 million is needed to help get this important research effort under way. I respectfully request that the full amount be appropriated for this project.

PEST CONTROL ALTERNATIVES FOR FRUIT AND VEGETABLE PRODUCTION

Recently, the agricultural industry has received much criticism about the misuse of chemicals and pesticides which aid the farmer in fighting insects and weeds. Several fruit and vegetable farmers in South Carolina have contacted the professors at Clemson University about conducting a research program to aid in reducing the use of chemicals to control weeds and other pests. The farmers request for this assistance is evidence of the fact that they are truly concerned about providing the consumer with a quality product that is also safe to eat. Clemson University has estimated that $750,000 is needed to fund this farmer-requested research program. I request that the Subcommittee allocate the full amount for this worthwhile program.

Mr. Chairman, I thank you for allowing me the opportunity to submit this testimony. I hope that it will be beneficial to you and the other committee members in your efforts to prepare the fiscal year 1991 Agriculture, Rural Development and Related Agencies Appropriations Bill.

U.S. AGRICULTURAL EXPORT DEVELOPMENT COUNCIL

STATEMENT OF HELEN MILLER

The U.S. Agricultural Export Development Council (USAEDC) is a group of 72 non-profit, producer and agribusiness organizations. Our shared goal is to develop overseas demand for U.S. agricultural products. We are proud to say that the dedicated efforts of the USAEDC members have resulted in expanded sales of a variety of U.S. agricultural commodities to all regions of the world. Our testimony will focus on the U.S. Department of Agriculture's international programs as administered by the Foreign Agricultural Service (FAS).

Fiscal 1990 U.S. agricultural exports are forecast to decline to $38 billion, a $1.7 billion drop from the year before. Lower prices for most grains and oilseeds largely account for what is expected to be the first decrease in export value since fiscal year 1986. Export volume is expected to remain close to fiscal year 1989 levels. Happily, U.S. agricultural imports are forecast to drop to $21 billion reflecting a trade surplus of $17 billion. This figure is down only slightly from fiscal year 1989.

The export recovery of the last several years seems to be leveling off. This is generally due to the combination of a pervasive drought in the mid-West, falling commodity prices, and plentiful agricultural production elsewhere. The increasing possibility for a normal crop year next year underscores the need for the U.S. to remain committed to an aggressive export stance.

Also, we should add that the world has changed quite dramatically since the last round of appropriations considerations. The fall of Communism in Eastern Europe signals a need for a bold U.S. response. The people of the newly-democratizing nations are literally starved for the variety of foods the U.S. can provide to them. The potential is limitless for market development in Eastern Europe. It is already quite clear that our competitors are ready to provide whatever is necessary to these new governments. Will the U.S. be satisfied to stay on the sidelines? Can we honestly afford to?

Against the backdrop of international changes, the U.S. Congress is scheduled to complete farm legislation in 1990. When that is complete, there may be an agricultural trade agreement among the GATT participants which the Congress will also have to consider. 1990 is going to be a very busy year. It will also be a year of choices. The President and Secretary Yeutter have already indicated that our financial resources are limited. A rededication to a strong agricultural export policy should be our highest priority. We simply must be prepared to meet the challenge presented to us.

The Foreign Agricultural Service

Our testimony will focus on the U.S. Department of Agriculture's international programs as administered by the Foreign Agricultural Service (FAS). USAEDC believes these programs are immensely important in assisting U.S. agricultural producers to compete in the world marketplace. There is no doubt that these programs have been successful.

Since its inception in 1954, long-term market development activity has been the core function of the Foreign Agricultural Service. This is a tremendous job. The FAS has a talented network of agricultural counselors, attaches and trade officers who provide a wealth of important information upon which U.S. exporters make export sales and marketing decisions. These overseas staff are responsible for providing not only foreign supply and demand information, but also news of macroeconomic developments, policy changes, and the more subtle changes in tastes and preferences. These intelligence efforts help maximize U.S. export opportunities.

In recent years, the FAS presence overseas has been threatened by rising costs. This is especially unfortunate in light of the dramatic political changes currently underway throughout the world. We believe there is a need for more counselors to be dispatched to identify opportunities for U.S. agricultural products, particularly in those markets which have hitherto been closed to U.S. exports.

The Washington-based staff of FAS is also very important. These people help to formulate the Department of Agriculture's international trade policies and programs with the goal of maintaining and expanding markets for U.S. agricultural products. The FAS monitors compliance with bilateral and multilateral trade agreements. It identifies barriers to trade and works with the office of the U.S. Trade Representative to remove them. At present, FAS is quite involved in the final months of negotiations within the Uruguay Round. If there is an agreement to liberalize trade, FAS's limited personnel resources will be further taxed.

As you can see, the work done by FAS is vital to U.S. agriculture. We urge the subcommittee to recommend a minimum of $115 million for Fiscal Year 1991 for the FAS programs which are so important in helping U.S. producers compete in world markets.

Market Development Activities

Over the years, the private-sector and FAS have forged a successful partnership to expand U.S. agricultural exports. The Market Development Cooperator program is a permanent program to fund basic market development and trade servicing activities. Its goal is more long-term than many of the other programs administered by the FAS, although it also seeks to promote U.S. products and to expand market share in foreign nations.

One program that has enhanced the success of the FAS cooperator program is the Targeted Export Assistance (TEA) program. It is a child of the 1985 Farm Bill's competitiveness push. It was designed to assist exports of products adversely affected by the unfair trade practices of competitor and other nations. TEA has proven to the a particularly valuable market-opening tool because it has increased the scope of market development activities and the number of organizations eligible for assistance. TEA is a unique union of the public and private sector which identifies mutually beneficial trade and development projects, improves the effectiveness of U.S. food assistance and export programs, provides the groundwork for improved export market opportunities, and lays the foundation for a long-term coordinated trade and development strategy.

In fiscal year 1990, TEA was funded at $200 million and 46 organizations were eligible to participate. We support authorization in FY91 at $325 million. We will request that the TEA program be reauthorized in 1990 farm legislation at the level indicated in the 1985 farm bill.

Other Export Programs

In addition, the FAS administers a wide variety of export programs that promote the foreign consumption of U.S. products. The GSM-102 Export Credit Guarantee Program helps stimulate U.S. exports by assuring the availability of bank financing to foreign purchasers on credit terms of up to three years. The program operates when credit is necessary to increase or maintain U.S. exports to a foreign market. In FY89, $4.95 billion in guarantees were announced for 26 countries. So far in FY 90, USDA has announced $4.2 billion in short-term guarantees. We expect the demand for such credits to increase next year in light of the dramatic changes underway in Eastern Europe.

We recommend an increase of at least $1.5 billion in funding for the GSM-102 (6 motnths - 3 years) program for fiscal year 1991. We further recommend that the proposal in the FY 1991 budget to cap the GSM-102 program at the $5 billion level be rejected by this committee.

The GSM-103 (3 - 10 years) Intermediate Export Credit Guarantee Program provides guarantees on commercial credit with repayment terms of four to ten years. This program is designed to help developing countries make the transition from concessional to cash sales. While the annual funding level of $500 million is currently adequate to meet demand, the changing world situation may necessitate increases.

The 1985 Farm Bill sought to strengthen FAS's export promotion activities in the face of unfair trade practices. The Export Enhancement Program was created to help regain agricultural markets lost in the early 1980s and is often used in conjunction with short-term credits. The EEP uses Commodity Credit Corporation commodities to make U.S. products more competitive in the world marketplace and to offset the adverse effects of unfair trade practices or subsidies. Under the EEP, agricultural commodities owned by the CCC are made available as a bonus to U.S. exporters to expand farm sales into targeted markets.

We continue to recommend that the EEP be funded at the $1 billion level.

While high-income countries have traditionally been the most important markets for U.S. agriculture, the PL-480 or Food for Peace program has set an excellent record in promoting the sale of farm goods to the developing nations of the world, In the past two decades, these lesser developed countries have emerged as the U.S.' largest aggregate agricultural export market. The PL-480 program allows us to maintain a generous humanitarian food, fiber and shelter aid commitment, while continuing to promote the use of U.S. products. USAEDC would like to see the program become more market-oriented in its approach, although we are, for the most part, quite satisfied with the operation and funding of the program.

Conclusion

We believe that the U.S. currently has the tools it needs to remain competitive in world agricultural markets. Why then, did U.S. agricultural exports turn down in fiscal year 1989? We need to reaffirm our commitment to the goal of competitiveness and to fund our existing programs to maximum efficiency. Let's not miss any of the opportunities to improve the well-being of U.S. agriculture. We at USAEDC are ready to meet the challenges ahead of us. But we cannot work alone. Admittedly, we need the intelligence and expertise of the

Foreign Agricultural Service to help us identify our market opportunities. And we need the commitment from Congress that the fruits of our labors will be available at competitive prices to the world.

USAEDC respectfully urges this subcommittee to make USDA's export programs its highest priority. The U.S. is on a threshold of a new decade. We learned a lot from the experiences of the 1980s. Let's use that experience and work together to make the 1990s fulfilling and prosperous for U.S. agriculture.

U.S. WHEAT ASSOCIATES

STATEMENT OF DON LOESLIE, CHAIRMAN OF THE BOARD

Summary: Mr. Chairman, I am requesting an increase in funding the four ARS wheat quality labs. Last year we requested an increase of $2 million, and Congress was able to provide an increase of $600,000. We appreciate that additional amount, but we still need the remaining $1.4 million to meet the essential program and staffing requirements.

End Summary

The four labs are the Soft Wheat Quality Laboratory at Wooster, Ohio (established in 1936), the Hard Winter WheatQuality Laboratory at Manhattan, Kansas (1937), the Western Wheat Quality Laboratory at Pullman, Washington (1946), and the Hard Red Spring and Durum Wheat Quality Laboratory at Fargo, North Dakota (1963).

Until this year, funding for these labs has changed little over the last decade, and our producers believe that this situation, if not reversed, will affect the ability of the U.S. to compete with other major exportersof quality wheat.

In the current era, quality and diversity can be singled out as factors critical to the future competitiveness of U.S. wheat in world markets. The multiplicity of classes produced in the U.S.--hard/soft, white/red, spring/winter--must certainly be viewed as an advantage to both domestic and export markets in responding to highly diverse end user requirements.

The ability of the U.S. to deliver wheats of consistent quality within each of these classes is one of the preeminent issues identified in the OTA report on grain quality. In the relatively unregulated U.S. system of grain production and marketing, the breeder and producer will continue to respond to government policies that emphasize yield over quality.

The four labs support USDA agencies and the export industry in resolving quality problems as they arise and their mission has never been more important than it is today. This mission includes:

-evaluation of wheat breeding lines for quality, including milling and end-product performance,
-improvement of the efficiency and relevance of quality tests, and
-support for USDA regulatory/action agencies and industry groups in problem solving, particularly with regards to wheat exports.

The labs like other "core" programs, have suffered from cost inflation in salaries, supplies, state-of-the-art equipment, and facility maintenance, and from the need for ARS to be responsive to new program priorities including biotechnology, food safety and water quality.

Current funding, essentially equally divided among the four laboratories, is about $2 million. The Congressional add-on of $600,000 in FY 1990 (150,000 per laboratory) provided the first significant increase in almost two decades.

As important as this increase is, unfortunately, it does little more than improve the operational efficiency in breeding line evaluation and ensure their ability to keep up with the rapidly expanding numbers of varieties to be tested.

It does not provide the funding necessary to address the critical issues of methodology development needed to assist the breeder in early generation evaluation (which exponentially increases the numbers of samples to be analyzed) nor will it allow for increased research on rapid, objective procedures for assessment of intrinsic qualities important to the consistency and quality of exports.

In addition, there also are substantial research needs in the area of bunts and smuts. The threat here relates to the movement of pathogens from infected countries to the United States which represent serious potential losses.

I would note further that Pioneer Hi-Bred International recently announced that it is discontinuing its work on developing improved Hard Red Winter and Hard Red Spring varieties. Pioneer has donated germplasm and commercial varieties of HRW to Kansas State University and HRS to North Dakota State University Research Foundation. I would anticipate that this development will place a greater future demand on the research budgets of those two states and also the Agricultural Research Service.

Mr. Chairman, we recognize the funding constraints that Congress faces, but we feel that it is urgent that a substantial increase be provided. We will need a steady long-term commitment in order to meet the quality challenge that is before us.

UNITED STATES AGRICULTURAL INFORMATION NETWORK

STATEMENT OF JOHN W. BEECHER, PRESIDENT

I am John W. Beecher, Director of Libraries at North Dakota State University in Fargo, North Dakota. In my capacity as President of the United States Agricultural Information Network (USAIN), I am submitting this written testimony for the record to support the budget request of the National Agricultural Library for Fiscal Year 1991.

The United States Agricultural Information Network is a nascent organization being formed by individuals and organizations dedicated to broadening access to the national information resource base relevant to agricultural research, education and applied agriculture. The objectives of the network include: providing a forum for discussion of agricultural information issues (especially those relating to information collection, organization and access); taking a leadership role in the formation of a national policy related to agricultural information; and making recommendations to the National Agricultural Library on agricultural information matters. To accomplish these expectations, USAIN is committed to strengthening agricultural libraries and information services throughout the United States.

USAIN is the first organization developed specifically to provide a national forum through which agricultural librarians might address the myriad issues associated with the collection and delivery of agricultural information in the 1990s. USAIN's charter membership drive was initiated this past winter. It already has a membership of approximately 150 individuals and 30 institutions representing a broad constituency of governmental, educational and business groups. (See attached listing.)

The National Agricultural Library is of supreme importance to all agricultural librarians and information specialists. We rely on the depth of its collections to supplement our local inadequacies; we rely on its initiatives in providing innovative programs and services; above all we rely on its leadership, to which USAIN in great part owes its existence. Perhaps a brief report on USAIN's establishment, its programs, (supported in large measure by the NAL), and its innovative services, will serve to demonstrate the vital role the NAL fills for all agricultural libraries and research units.

In a 1982 report to then-Secretary of Agriculture John Block, the Interagency Panel on the National Agricultural Library, composed of leaders from the library and information fields and from the U.S. Department of Agriculture, strongly recommended that the NAL "coordinate a national network of public and private agricultural libraries and information centers, including the land-grant colleges and universities, state supported colleges and universities, and other public and private sector organizations involved in agricultural information."[1] In response to this recommendation, the NAL assumed a leadership role in the establishment of such a network, undertaking a series of discussions, workshops and meetings which, six years later, culminated in the formation of USAIN.

The potential of networking is enormous, having significant implications for the economical acquisitions of agricultural books, journals and other materials, coupled with the widest and most effective possible dissemination of those materials. To achieve these goals, the administration of the NAL has recently initiated, developed and expanded a large number of cooperative networking programs. These include cataloging and indexing programs, microfilming of state publications, document delivery for USDA employees, training and internship programs for staff and users, preparation of information products, and research on information technology applications. This latter includes a telefacsimile study, the use of laser media for storage and retrieval of full text documents, and a significant project for automatic digitizing of page images and coding of full text. Forty-five land-grant libraries have committed funding to this latter program, and are currently participating in testing four pilot CD-ROM databases. USAIN members have actively supported and participated in this 4-year project and are hopeful that such projects can be continued and expanded in the near future. Specifically, USAIN supports the proposed Midwest Agricultural Biotechnology Information Center, a proposal of Iowa State University and several other midwestern land-grant universities with active research programs in agricultural biotechnology. Agricultural biotechnology is a major new research area for land-grant institutions and the NAL; unfortunately, little attention has yet been given to providing the information resources necessary to support researchers and scholars in our universities or agribusiness research laboratories. We do know that the information and publications needed are very expensive, that they are increasingly published in electronic format, and that no one institution or library can afford to collect comprehensively in this research area. The proposed Midwest Agricultural Biotechnology Information Center is an envisioned collaborative approach which would coordinate NAL's efforts with university centers of excellence in subspecialties of agricultural information.

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[1] Interagency Panel on the National Agricultural Library. Assessment of the National Agricultural Library--Final Report to the Secretary. United States Department of Agriculture, Science and Education, Washington, D.C.: 1982. p.1.

During the past decade, libraries--especially U.S. libraries, including the NAL--have been beset by profound and long-term changes, accompanied by profound and long-term challenges. In less than a generation, almost every function of the library has been altered to some degree by technological advances in electronics, computerization, and telecommunications. New formats, such as CD-ROM and computer software, are expensive to acquire but are essential components of a state-of-the-art library. They are also now considered necessary to meet the constantly rising expectations of our users.

Another problem libraries have had to face is that of rising material costs, especially for foreign journals. That and currency fluctuations have eroded the U.S. science and technology library community's ability to maintain the integrity of our collections. All the nation's libraries have come to depend on the NAL as a national resource and the repository of "last resort" for maintaining agricultural materials, especially foreign journal subscriptions. Unfortunately, because of budgetary constraints, the NAL has recently been forced to curtail certain acquisition programs and to cancel unique journal titles. The result has been a significant decrease of world-wide agricultural information coverage in the U.S., with serious implications for the agricultural information and research communities; the ability of U.S. libraries and research centers to deliver needed information to users is seriously compromised.

Simply put, the continuing and escalating expense of trying to meet the expanding and legitimate expectations of the agricultural information community has grown beyond current financial capabilities. As we move into the 1990s, there is a need to secure funding well in excess of current appropriations for agricultural information systems if the U.S. is to remain competitive in the world agricultural marketplace.

Therefore, I strongly support NAL's request for $15,773,000 of appropriated funds for Fiscal Year 1991, a proposed increase of $1,097,000. The total request represents an extremely modest sum for a national scientific and technical information resource, one to which all agricultural, educational and research communities look for leadership and support. One which has, in fact, proved itself to be a highly effective catalyst for the efficient and effective use of the national agricultural information base. In addition, I support the Fiscal Year 1991 request for $3,500,000 for the proposed Midwest Agricultural Biotechnology Information Center as initiated by Iowa State University.

Your support of the proposed NAL budget and Iowa State University's proposed Midwest Agricultural Biotechnology Information Center will have positive implications for all U.S. agricultural, educational, and research units, and will be greatly appreciated by me and fellow members of USAIN.

UNITED STATES EXPORT COUNCIL FOR RENEWABLE ENERGY

STATEMENT OF SCOTT SKLAR, EXECUTIVE DIRECTOR

INTRODUCTION

The U.S. Export Council for Renewable Energy (US/ECRE), formed by the nine national renewable energy trade associations to promote exports of alcohol fuels, geothermal, hydropower, passive solar, photovoltaics, solar thermal, wind and wood energy technologies and services. Our associations of manufacturers, service providers and component suppliers, urges the Subcommittee on Agriculture, Rural Development and Related Agencies to:

- o Create a Center for Advanced Water Technology using existing Agriculture Research Facility(s) as a technical training center for foreign agricultural experts and government personnel, and
- o Provide support of $350,000 as an add-on to current USDA technical activities to assist the renewable energy industries to develop a Center for Excellence on photovoltaic, solar thermal and wind water pumping & irrigation, and purification technologies (made in the United States) to insure our dominance of the international markets vis-a-vis our international competitors.

The reason for these requests are quite simple. Our international competitors have successfully used such government-supported training centers as a way to build their overseas markets. Our industries need like support at a time when the solar and wind energy industries are locked in an intense battle for the world markets. The 1990 year represents a critical time for the U.S. renewable energy industries and we cannot afford to lose world markets which are the very life blood of our survival. The U.S. Department of Agriculture's support will be very important to increase our world market share, and that support is essential for our industries to grow.

Our international competitors have successfully directed their development and export assistance programs to increase the use of renewable energy resources while building their renewable energy industries, in some cases to surpass the United States. The U.S. Agency for International Development has recently published, "Renewable Energy Agriculture & Health" which clearly describes a series of cost-effective renewable energy applications -- most of which can easily compete today against remote diesel generation, water pumping and irrigation.. The export programs of the United States of America must expand these renewable energy applications many fold to promote real economic growth and curtail profound environmental degradation.

OBJECTIVES

The Center for Advanced Water Technology (CAWT) will be a development training center in the field of rural water supply. The Center will serve as an applied technology training center at an existing Agricultural Research Center to train overseas agricultural government planners, technicians, and farmers to become familiar with U.S. solar and wind technologies.

The basic objectives of The Center is to:

1. Enhance U.S. industry competitiveness in international water supply markets.

2. Increase exports of U.S. advanced water pumping/lifting and purification/desalinization solar and wind technologies.

3. Facilitate industry/government cooperation in the area of overseas water resource development.

4. Provide technology to address a major development and health impediment in the Third World.

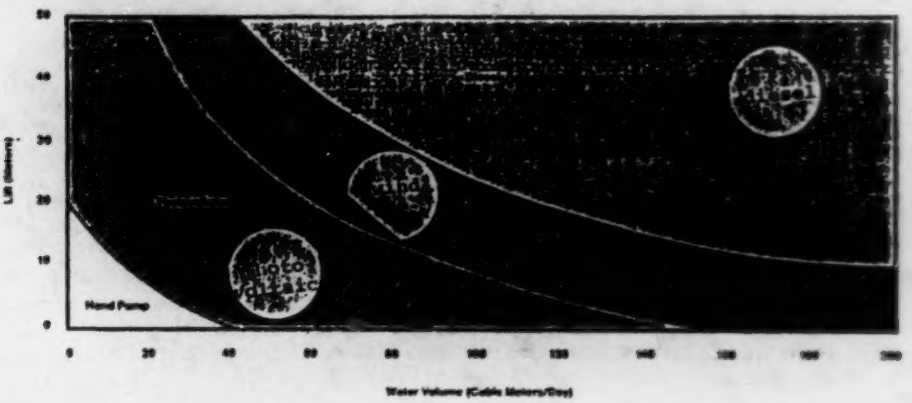
PROPOSAL

An affordable and secure supply of safe drinking water is a key element necessary for sustainable rural development. Agricultural productivity, including the ability to feed the local population as well slow rural-to-urban migration, is also governed by the availability of water.

According to World Bank figures, over two billion people will not have access to safe drinking water by 1990, the end of the current World Bank/United Nations International Drinking Water Supply and Sanitation Decade. The annual amoritization costs of providing new water supplies to these rural populations will range from $4-$24 billion, depending on the level of service provided. In most cases, the main cost elements in providing new water supplies will be the drilled wells and the equipment for pumping water. The need for water conditioning equipment to desalinate or purify water significantly adds to these costs.

Since the utility grid seldom extends into rural areas in need of water resource development, the use of solar and wind energy technologies are necessary. The dominant pumping technologies in developing country rural areas are presently hand-pumps and diesel-powered pumps. Diesel generators supply power to most remote desalinators and water purifiers. European manufacturers currently hold dominant market shares in the worldwide supply of both hand-pumps and small diesels. Hand-pumps, in which people provide the power, are used when water demand is low and the well depth is under 100 feet. Diesel pumps are used for higher water volume needs or when water wells are deeper.

But the economics of diesel pumps, even at today's low fuel prices, are poor at low-to-moderate pumping volumes. This creates a sizable market niche where wind and photovoltaic powered water pumping systems are very competitive as can seen in the following graph taken from a recent USAID publication.



Range of Competitive Use of Photovoltaic
and Wind Water Pumping

What stands in the way of an expanding U.S. market, is the difficulty endusers and financiers that are unfamiliar with new technologies. Being able to show a cost or performance advantage is not good enough. Developing country planners, multilateral banks and bilateral development agencies are very familiar with hand-pumps and diesels, but woefully ignorant of the advantages and limitations of wind and solar equipment. Our international competitors promoting wind and solar have developed training centers as we propose in their countries where they train potential users, funders or implementors. A major effort in the areas of education and promotion by the United States will be necessary to turn the promise of advanced pumping technologies into real sales and widespread use. This effort is beyond the capabilities of the renewable energy industries.

The opportunity in advanced water pumping and purification systems is not lost on European governments which have taken a very active role in facilitating and promoting exports. The European Community has financed $30 million for Saharan African countries to purchase European photovoltaic and wind pumps. They realize that by providing "seed" money for training and technical support as the wind training center in Denmark provides, and innovative market promotion as does England, France and the Netherlands, will dramatically build their world market share.

While U.S. manufacturers have superior wind and photovoltaic pumping and solar thermal purification technology, we may ultimately lose out to European companies on the basis of governmental support. Drawing from the European model, the U.S. Export Council for Renewable Energy (US/ECRE) and the member groups: the American Wind Energy Association (AWEA) and the Solar Energy Industries Association (SEIA), are proposing the establishment of a very modest institution dedicated to promoting U.S. interests in the field of rural water supply. The proposed Center for Advanced Water Technology (CAWT) will have both advanced and conventional water pumping equipment operating onsite for training purposes and comparative studies. Wind and solar powered water purifiers and desalinization equipment will also be demonstrated for training purposes.

CAWT will offer regular training programs in the areas of resource assessment, specific technologies, least cost and project planning, and installation and service support. Technical and support materials and case studies will promote the advantages of advanced pumping and purification systems will give visibility to U.S. equipment and services. CAWT is also expected to provide significant benefits for domestic agriculture and land management. In the United States where there is a growing need for irrigation and farming practises that are more energy and water efficient. For instance, in the Southern Great Plains alone there are some 510,000 low volume irrigators relying on electricity and natural gas. As the costs for electric power and natural gas increase, the economic viability of these farms will be severely effected, for example, as some farmers in the Oklahoma and Texas Panhandles have experienced a tripling of their rates.

The CAWT program will be developed through assistance by the U.S. Department of Agriculture and the other federal agencies participating in the federally-mandated Committee on Renewable Energy Commerce and Trade (CORECT) and the associations of the U.S. renewable energy industries. While the FY'91 start-up costs will be $350,000, the U.S. solar and wind industries will provide cost-sharing to begin training USAID and USDA technical personnel, foreign nationals, and students. Industry workshops will be necessary to integrate industry activities with this proposed training institions.

The location of the institution must be at an existing Agricultural Research Center with good-to-moderate wind and solar resource, with close ties to a University with a strong applied research program, and with facilities suitable for installing and training on advanced water pumping and purification systems. The Center will receive technical support from the U.S. Agency for International Development (USAID) and the U.S. Department of Energy through the Renewable Energy Design Assistance Center at the Sandia National Laboratories.

CONCLUSION

If the United States is to retain its technical predominance in new high-technologies, we must be willing to adapt to new strategies to commercialize our newest and best products and services. As the solar and wind industries have learned from our international competitors, customers buy products and services on which they were trained and educated about. While the solar and wind industries export over sixty percent of our technologies to the developing world, we are losing our world market share to more sophisticated overseas government promotion efforts on behalf of their solar and wind industries.

The rural sector in The Third World is a great market opportunity with multibillion dollar potential. The U.S.

Department of Agriculture can play a significant role in opening up these markets through the utilization of an existing Agricultural Research Center to become headquarters for The Center for Advanced Water Technologies (CAWT).

The United States no longer has the luxury to sit back and allow market opportunities to be lost. Our industries' modest request for $350,000 in FY'91 is reasonable, fits the mission of USDA, builds the U.S. solar and wind industry markets, improves the quality of life in the Third World, and adds to the United States competitive advantage yielding jobs and economic growth.

The Center for Advanced Water Technology (CAWT) deserves the support of the Subcommittee on Agriculture, Rural Development and Related Agencies. We urge you to seriously consider this innovative proposal and we will provide the Subcommittee with additional information upon request.

Thank you.

UNITED STATES TELEPHONE ASSOCIATION

STATEMENT OF JAMES W. McCONNELL, MANAGER, SCOTT COUNTY TELEPHONE COOPERATIVE

Opening Remarks

Mr. Chairman and Members of the Subcommittee, I am James W. McConnell, Manager of Scott County Telephone Cooperative. I appear before you as a representative of the United States Telephone Association (USTA). USTA represents about 1100 local telephone companies that provide telecommunications services to over 98 percent of the access lines in the United States. USTA members range from large publicly-held corporations to small family-owned companies and cooperatives owned by their customers. I present this testimony in the interests of the members of USTA and the customers they serve.

Local telephone companies are dedicated to fulfilling two goals: serving the nation's telecommunications needs and maintaining universal service at reasonable rates. USTA members, both large and small, firmly believe that the targeted assistance offered by a strong and viable Rural Electrification Administration (REA) is essential in order to maintain a healthy and growing rural telephone industry that contributes to the provision of universal telephone service. We appreciate the strong support this committee has provided for the REA telephone program since its inception in 1949 and look forward to a vigorous REA program for the future.

Recommendations

USTA recommends the following for the continuation of a strong REA Telephone Program:

1. Maintain the fiscal year 1991 telephone loan program authorization at the same levels approved for fiscal year 1990:

REA Insured Loans	$239,250,000 - $311,025,000
Rural Telephone Bank Loans	$177,045,000 - $210,540,000
REA Loan Guarantees	$119,625,000 - $138,765,000

2. Continue the important task of fully capitalizing the Rural Telephone Bank (RTB);
3. Set the REA administrative budget at a level to ensure that adequate personnel and equipment are available to perform its statutory functions;
4. Continue to prohibit REA general funds restrictions;
5. Continue to prohibit REA from regulating the sequence of advance of loan funds;
6. Encourage REA to stimulate investment in new technologies through modification of its dividend policy;
7. Ensure that financing is provided to achieve all statutory purposes.

We understand the budget constraints Congress must face, but the Administration's fiscal year 1991 budget for REA threatens our ability to adequately serve the nation's telecommunications needs and to maintain universal service. The Administration's budget proposals for the REA telephone programs would change REA from an effective rural development program to one of little or no benefit to rural telephone customers. For FY 1991 the Administration proposes to eliminate all insured and 100 percent guaranteed loans and substitute 70 percent guarantees of privately originated loans. In addition, it once again proposes to dramatically increase RTB interest rates in order to accelerate the schedule for Bank privatization. USTA opposes these proposals.

A Changing Industry

The telephone industry is undergoing dramatic change. Both the technological underpinnings and the regulatory atmosphere are much different than they were just a few years ago. Any type of change, whether positive or negative, can create dislocations in the economy. Now is not the time to weaken a program that helps rural Americans cope with current changes in the telecommunications industry and prepare for the next century.

Utilities are capital intensive. This is particularly true of rural telephony. All utilities need to invest large sums of capital to extend service, modernize plant and provide new services. Rural utilities generally have higher costs and need more capital to meet their universal service obligations.

The majority of REA borrowers' switching offices still have mechanical step-by-step technology. Rural telephone systems will need to update their switching offices to continue the present level of telephone service and to provide the new services that urban customers will soon enjoy. Maintenance of the old step-by-step offices is becoming more expensive and parts are getting scarce.

In the last 10 to 15 years, most REA borrowers have upgraded to one-party service by installing buried cable and other equipment. Whether the new technology is digital switching, signalling system seven or lightwave transmission, rural customers demand and deserve facilities that provide a quality of service that is equivalent to that received by urban customers. Rural economies require this to remain viable.

Just as technology is rapidly changing, so is the regulatory structure of telecommunications. Local residential customers now shoulder a greater share of telephone network expenses. The REA telephone program targets assistance to rural telephone customers. It keeps them on the network by allowing for reasonable phone bills and extends and expands that network in rural America to meet the future needs of these customers.

Given the technological necessity to update switching centers and to replace outside plant, along with the stress of coping with regulatory changes, maintaining REA lending at 1989 authorized levels is essential for the preservation of universal service. The job of serving rural areas requires continuing commitment; it is certainly not finished.

The chairman of the FCC recently explained the importance of deploying new technologies to rural areas and voiced support for continued REA lending for the development of rural telecommunications networks. USTA shares his view and hopes Congress will reject Administration budget proposals for REA which would severely limit the deployment of new technologies in rural areas.

The REA Telephone Loan Program Aids Rural Development

Good telephone service is an essential part of rural America's infrastructure, and yields enormous returns to the national economy. It helps expand production, both agricultural and non-agricultural; reduce the trade deficit, generate additional Federal, state and local tax revenues, and stimulate employment. Now, when many rural areas require a modern telecommunications infrastructure to stimulate needed economic development, REA is needed more than ever.

The REA telephone program has never had a default in its 35 year history. Fully funded and properly administered, it can be a model rural development program. If anything, the REA program should be expanded, not reduced.

REA Helps Rural Americans

There is little argument that good, dependable telephone service is a necessity of modern life. Without the REA program, telephone service quality in rural areas could deteriorate. The telephone amendments to the Rural Electrification Act and REA standards ensure that good telephone service is provided to the "widest practicable number of rural users" in each borrower's service area.

The REA program assures the availability of telephone service in two ways. First, it provides the necessary capital to fund the extension and improvement of facilities. Second, the relatively low cost of that capital enables rural telephone systems to counter inherently high costs of service. After all, offering service at rates which made that service unaffordable is, in effect, the same as having no service at all.

The REA telephone program directly benefits rural customers. Telephone companies and cooperatives act as conduits for service benefits from the federal government to rural telephone customers, who are the intended beneficiaries of the REA program. The REA program is a unique voluntary public/private partnership that benefits rural people. The government's contribution is leveraged by the equity, management expertise and dedication of local telephone companies and cooperatives.

REA Policies Frustrate Congressional Intent

In the last year, REA promulgated regulations which significantly increase the eligibility requirements for receiving a loan and reduce the benefits which Congress intends rural residents to receive. Included were provisions: increasing the financial tests which must be met to qualify for a loan; shortening the repayment period for loans from 35 years to the average capital recovery period of the assets financed; refusing to lend for certain purposes that are permitted by the Rural Electrification Act; and altering policies which serve to restrict eligibility for loans. Any policies that contravene the intent of Congress by reducing or restricting the benefits of the program should be eliminated.

Completion of Full Capitalization of the Rural Telephone Bank (RTB)

Through its adoption of an interest rate formula for the Rural Telephone Bank, Congress recognized the value of the government purchase of Class A stock in the Bank. The formula specifically referred to the stock as a component of the calculation of the interest rate and was structured to ensure that the stock was purchased promptly. The Class A stock serves the dual purposes of allowing the Bank to lend at below market rates and infusing capital into the Bank, thus enabling it to fulfill its role as a substantial supplemental source of funding for telephone borrowers. The full capitalization of the Rural Telephone Bank should be completed as authorized under present law.

REA's Mortgage Restrictions on Dividends are Unreasonable

REA unreasonably restricts the amount of dividends which borrowers are allowed to pay to stockholders. Overcapitalization of these telephone companies increases the earnings base of the company and results in higher customer rates. These restrictions limit the investments a borrower may make with its own funds in telecommunications projects such as cellular radio and other rural development projects. Congress should require that REA modify its mortgage restriction on dividends consistent with loan security.

REA Should Continue to be Prohibited from Imposing General Funds Restrictions and Regulating the Sequence of Advance of Loan Funds

Early in the 1980s, REA's restrictions on loans and advances based on a borrower's level of general funds almost destroyed the REA program, as these restrictions excluded three quarters of all borrowers from the program. The initiative of this committee and the subsequent action of Congress prohibited REA from relying on these restrictions. Customers were again able to receive the full benefit of the REA program. We hope and recommend that the general funds prohibition be included in the fiscal year 1991 appropriations bill.

REA's policy that required advance of certain funds before other funds resulted in higher costs to subscribers and/or deferral of planned construction to improve service. By prohibiting this policy Congress has ensured that the intended benefits of the program are realized. We urge that the prohibition on regulating the sequence of advance of funds be included in the fiscal year 1991 appropriations bill.

Provide Adequate Staffing and Funding for Administering the Program

The Administration's budget proposes to reduce the staffing level from 550 at the end of calendar year 1989 to 531 for fiscal year 1991. The telephone staff's share of this reduction will adversely impact REA 's ability to administer the program. REA's engineering staff develops standards and specifications for telecommunications equipment and technological design and application of innovations for rural areas. The REA management staff is responsible for monitoring the security of over $7 billion in advanced loan funds. Adequate staffing and an adequate administrative budget is essential for an effective REA telephone program, now and in the future.

Conclusion

Congress will assure the effective operation of this worthy and necessary program by continuing to authorize adequate loan levels, by encouraging REA to abandon policies and proposals which inhibit the benefits of the REA program from reaching rural America, and most importantly, by retaining the worthwhile partnership between REA, telephone companies and customers.

Thank you again for this opportunity to present our views concerning this vital program.

UNIVERSITY OF ARKANSAS

STATEMENT OF PRESTON E. LaFERNEY, VICE PRESIDENT FOR AGRICULTURE

I am pleased to offer my thoughts concerning an opportunity which is being presented to the Congress this year to act boldly for the betterment of our populace and economy through a major funding initiative for research on agriculture, food, and the environment. It is designed to revitalize and strengthen agricultural research. A time-proven structure is in place, the issues are clearly before us, and state legislatures generally have underwritten the major support for current programs. The need is for new money in major magnitudes to fund new programs and new initiatives in agriculture, food, and the environment -- providing new technology to integrate goals of profitability, sustainability, and food safety and quality; increased international competitiveness; new knowledge on resource conservation and use; and answers to consumers' concerns about food safety, quality and adequacy.

There is an urgency and readiness now to move ahead in addressing this host of priority issues through research to enhance international competitiveness, assure the continuance of a remarkably cheap domestic food supply, assist in national defense, assist in underwriting food assurance around the world, and responsibly addressing environmental and nutritional concerns at home. The door of opportunity is wide now for rapid, significant advances in these critical areas.

Six areas appropriately have been identified as must areas: (1) natural resources and the environment; (2) nutrition, food quality, and health; (3) new products, processes and research to add value to raw products; (4) markets, trade, and policy, (5) plant systems, and (6) animal systems. Unfortunately, the President's budget has recommended zero-funding for the value added and the markets, trade, and policy initiatives.

Equally unfortunate is the fact that the entire initiative is seriously underfunded as now proposed by the President. Funding must be increased beyond the $100 million to at least the $150 million level proposed by CARAFE, to make certain that two of the most critical areas receive significant new funding: (1) New products, processes and research to add value to products, and (2) markets, trade and policy (social sciences). Both of these initiatives are very high priorities with our industrial counterparts. In fact, the entire area of social sciences research cries out for additional funding, including the domestic and international economics of food, agriculture, and the environment and rural revitalization program areas.

Yet another deficiency of the initiative as it now stands is the OMB initiated proposal to "trade out" money (special grants) now significantly benefiting food, agricultural, and environmental research for the proposed new competitive grants. This obviously waters down the impact of the new programs, and makes the President's "short-funded" proposal "even shorter-funded".

The initiative as originally conceived and proposed--a major, new funding of agricultural research with balance among the six sub-initiatives outlined herein and with major attention to social sciences research, is sorely needed and due now. It would greatly benefit our State, Region and Nation through competitive grants in critical areas and a greater focus on interdisciplinary, interstate, and public/private cooperation/coordination of agricultural research.

Thanks.

UNIVERSITY OF GEORGIA

STATEMENT OF JOE L. KEY, VICE PRESIDENT FOR RESEARCH

Mr. Chairman:

I am writing relative to the National Initiative for Research on Agriculture, Food, and Environment (NIRAFE). As Vice President for Research at the state land-grant university and the nation's oldest state chartered university, The University of Georgia, I write in support of this national funding initiative. This program has the enthusiastic support of the President, the Dean of the College of Agriculture, the Director of the Agricultural Experiment Stations, and the faculty at the University. This initiative has the broadest based national support of any proposed program of which I am aware: the National Academy of Sciences, the National Association of State Universities and Land-Grant Colleges (NASULGC), the American Association of Universities which includes many private universities, many scientific societies, private industry, the new administration, and many scientists. This very strong and unequivocal support for this initiative is based on need and merit.

The proposed national initiative for research addresses the most urgent problems facing agriculture, food, and environmental concerns of our state and nation. If fully funded, this initiative will represent one of the strongest national investments to date to help assure a competitive position for agriculture in our state and nation. Our agricultural enterprise has long been underfunded, especially in the area of competitive programs open to all qualified scientists. In 1940, the investment in agricultural research represented over 40 percent of the federal R and D; today that figure is less than two percent! This investment in agriculture, food, and environment research will yield returns to our economy second to no investment that the federal government can make.

We must use new approaches and find new solutions to the problems of today in the proposed areas of research if we are to assure the future that we all want for the generations to come. While new technologies must be developed for the future, we have technologies in place today that would permit the scientific community, both public and private -industrial and academic - to protect better our environment, to lower production costs, and to produce a more abundant and safer food supply. For example, the technology exists to generate disease- and insect-resistant crop plants that could greatly reduce pesticide application, reduced crop production costs, and create a more pesticide-free food supply and environment. The application of these technologies, however, is limited severely by our knowledge base of the plant, insect, and pathogen life processes. Only research discovery will generate this essential new knowledge. The same applies to animal agriculture. The scientific expertise is available in our colleges, universities, national laboratories, and the private sector to compete for these funds related to agriculture, food, and environment and to generate the knowledge necessary to provide feasible and economically effective solutions to the major problems this initiative is to address.

Competition raises the level of creative inquiry. But this proposed competitive grants program must not come at the expense of existing agriculture research initiatives, as was proposed in the FY 1978 budget when the newly authorized USDA Competitive Grants Program was proposed by the administration for funding at about $27 million with a corresponding decrease in the recommended funding for the Cooperative States Research Service which supports our State Agriculture Experiment Stations (SAES). Few can appreciate this issue better than I, because as the first Director (1978-79) of the Competitive Research Grants Office in USDA my colleagues and I were greatly handicapped in meeting the planned objectives of this new program because of limited funds. We must maintain a well funded, strong SAES with both federal and state support. This proposed new initiative of competitive grants will make the existing system stronger since SAES scientists along with all others may compete for funds proposed for NIRAFE.

Based on the above brief synopsis of national need for this initiative and much background knowledge, we strongly support the recommendations made by the NAS Board on Agriculture for a $500 million budget for NIRAFE. While the administration is to be commended for its recommendation of $46.4 million in new funding for NIRAFE in FY 1991 and Congress for its authorization of the program in Title XIV of the Farm Bill, more is needed on a stepped-up time scale. We recommend that authorization in Title XIV be increased to the recommended level of $500 million or to such level as necessary to carry out the programs of this national initiative as proposed in the NAS report, "Investing in Research, A Proposal to Strengthen the Agriculture, Food, and Environmental System" (October, 1989).

We further recommend that the funding level for FY 1991 be increased significantly above the level proposed by the administration with the goal of at least $500 million being achieved in FY 1992. The problems are too large, the opportunity for progress too great, and the time too short for Congress to do less for the future of this great nation. Thank you for your consideration of this testimony and for your continued support.

UNIVERSITY OF HAWAII COLLEGE OF TROPICAL AGRICULTURE AND HUMAN RESOURCES

STATEMENT OF N.P. KEFFORD, DEAN

I support the need for new monies to increase the funding of research as proposed in the National Initiative for Research on Agriculture, Food and the Environment.

While this testimony will stress the needs of Hawaii, I would point out that the whole nation must face higher food prices, at best, or, at worst, will lose the ability to feed itself, unless the new technologies that result from research become available to replace those that have been lost due to changing policies.

In Hawaii, the deficiencies in the current levels of funding are particularly evident because research-based information on tropical agricultural systems and environments is must less than that existing for the temperate regions. For Hawaii to compete nationally and internationally, this gap in research must be closed through an infusion of additional funding.

Hawaii once had a technological advantage over competitor countries in the tropics. This advantage has been lost due to low funding levels and the regulatory environment prevailing in the United States. Leaders of Hawaii's agricultural industries who visit tropical countries in Asia and the Pacific Rim report that their counterparts in those countries laugh at the constraints under which agriculture in the United States must function. They are laughing about our impotence to compete. To compete globally once more, Hawaii and the United States must regain technological advantages through intensified research fueled by new funding.

This college must serve the interests of producers, processors, marketers, consumers, and the environment. Maintaining an even balance across this spectrum of responsibilities is increasingly difficult due to the dynamic changes in agriculture, communities, and fields of science. Consistent research advances in all areas must occur if full benefits to our society are to accrue.

The renewable natural resources of Hawaii are unique, vulnerable and more varied than most states. Conservation of those resources will require sound decision making based upon research. Such research must be accelerated.

Hawaii has established a joint research program with other units of the American Pacific and the need for research by our sister units is even greater than for Hawaii because they are further behind their competitors.

On behalf of Hawaii and the American Pacific, I commend to you the National Initiative for Research on Agriculture, Food and Environment.

UNIVERSITY OF IDAHO

STATEMENT OF A. LARRY BRANEN, DEAN

I wish to provide my written testimony on behalf of the University of Idaho for the National Initiative for Research on Agriculture, Food and Environment. Over the years, the United States agricultural research and education system has played a major role in developing one of the most productive and quality food and fiber systems in the world. For example, the success of Idaho's potato industry can be attributed in major part to the ability of the University of Idaho to provide the needed research to Idaho's progressive farmers and processors who developed this industry. Continuation of successful agriculture and food system industries will, however, face many challenges in the 1990s. The nation's agriculture must be able to remain internationally competitive and, at the same time, be able to address key environmental and human food safety and nutrition issues.

In short, to remain economically viable, the agricultural industry must develop compatible production systems which meet society's expectations for food and the environment. These new expectations will require new and more costly research efforts. Although we must continue to address existing needs, we must also re-direct resources to develop new technologies and approaches to meet future needs. The proposed research initiative will provide the research and education system the funds needed to develop new directions. Basing the allocation of these funds on a competitive process will assure that programs are of the highest priority, substance and quality.

I appreciate President Bush's recommendation to provide funding of four of the six priority areas identified by the National Academy of Science. However, I recommend that new funds also be made available to support the other areas of markets, trade and policy, and new product research to add value to raw products. Here in Idaho, the college's Agricultural Consulting Council (representing the state's agricultural organizations) has identified these areas for major emphasis. Idaho, like many other states, is becoming increasingly dependent on international markets and at the same time is concerned about competition from other countries. It is recognized that our greatest market niche will likely be in marketing of products with added value. We have consistently found that high quality products are more acceptable in other countries and also do a great deal to assure local economic development.

I recommend that additional funding be added to the President's proposal for research on the natural resources and environment, as well as nutrition, food quality and health. Again, our Agricultural Consulting Council has identified these areas for major emphasis. Many of our producers feel that the best marketing tool for Idaho products is to assure that they are of the highest quality and safety. They, along with our state government, have recently increased investments in these areas. The national initiative will provide the needed research to assure that these investments are well-founded and directed.

Overall, the National Initiative is of extreme importance to the continued success of Idaho's agricultural industries. The University of Idaho College of Agriculture fully endorses the recommendation for funding of the National Initiative with new money at the level of $150 million for FY91. The money is a wise investment for the future of our food and fiber system. It will enhance the existing investments from federal and state government and the agriculture and food industries of the U.S., and allow the continued success of the industries while at the same time assuring a quality food supply and environment for all citizens of the United States.

UNIVERSITY OF ILLINOIS

STATEMENT OF STANLEY O. IKENBERRY, PRESIDENT

MR. CHAIRMAN AND DISTINGUISHED MEMBERS OF THE RURAL DEVELOPMENT, AGRICULTURE, AND RELATED AGENCIES SUBCOMMITTEE:

We wish to testify on behalf of the proposed National Soybean Research Laboratory (NSRL) currently being developed at the University of Illinois at Urbana-Champaign. This project represents a bold initiative on behalf of the U. S. soybean industry. It is needed to help ensure the future competitiveness and profitability of the industry and to ensure that it will continue to make important contributions to the U. S. economy and U. S. consumers.

The soybean industry must be prepared to take advantage of emerging opportunities in global markets for soybeans and soybean products. The United States once dominated most of these markets but now faces strong competition from several other nations. The industry needs a comprehensive program designed to (1) identify important marketing opportunities, including new and improved ways of utilizing soybeans and soybean products, and (2) integrate genetic engineering, production, processing, marketing, and utilization research to achieve specific market goals.

NSRL scientists will develop new, effective, and efficient ways to manipulate the physical and chemical nature of soybeans. In cooperation with the private sector, NSRL researchers will develop new soybean varieties to meet specific market needs and new methods of processing, distributing, and marketing soybeans to capture new markets. This will give the soybean industry a solid base of information and developmental procedures from which to launch competitive initiatives.

It is important to note that this initiative has received broad-based support. In addition to the University of Illinois and the Land of Lincoln Soybean Association, this effort has been endorsed by the American Soybean Association, the Illinois Farm Bureau, and the Governor of the State of Illinois.

REQUEST FOR SUPPORT

Because of your leadership and commitment U. S. agriculture is the most productive agriculture in the world. This continuing commitment is reflected in the Subcommittee's action to provide $250,000 in FY 1989 to conduct feasibility and planning studies for the NSRL and $1,320,000 for architectural design and to begin construction in FY 1990. This amount was reduced slightly by the FY 1990 sequestration.

The original feasibility study and planning grant documents were submitted to the U. S. Department of Agriculture and approved by them. Detailed scope and program statements were developed, listing all activities to be conducted in the National Soybean Research Laboratory; the space these activities will require; and the specific configurations and equipment of the required laboratory and support facilities. We continue to move forward with the development of the laboratory.

Architectural design has progressed through program analysis and we are now completing the schematic design stage. The funds appropriated for FY 1990 will take us through early stages of construction, including preparation of the existing structure.

With your continued support and guidance, we will create a first-rate soybean research facility. To accomplish this objective, we request $3,500,000 to complete the project. When finished, we will have remodeled and renovated three floors of the Old Veterinary Medicine Building on the University of Illinois Urbana-Champaign campus. Because of the importance of this research initiative, the State of Illinois and the U. S. agricultural community are committed to providing moveable equipment for the facility, operating and maintaining the facility, and staffing it, henceforth. Additionally, the University is prepared and committed to provide resources to ensure this lab is a state-of-the-art facility able to effectively meet its mission.

OBJECTIVE OF THE NATIONAL SOYBEAN RESEARCH LABORATORY

The National Soybean Research Laboratory will enable soybean producers, processors, and marketers to achieve technological and economic leadership in the international soybean industry.

MAJOR ACTIVITIES OF THE NATIONAL SOYBEAN RESEARCH LABORATORY

The proposed National Soybean Research Laboratory will mount and coordinate major programs as follows:

1) maintain and improve soybean germplasm and genetic stocks

2) conduct research to enable genetic modification of the soybean with goals of achieving differentiation in world commodity markets and creating, penetrating, and maintaining niche markets for U.S. soybeans

3) conduct research to hasten development and commercialization of new soybean processing and distribution technology and new marketing and utilization strategies

4) conduct research on technological, economic, political, and social issues related to strategic management of U.S. soybean production, marketing, and utilization

5) provide education and information for soybean industry decision-makers and help transfer useful new soybean technology to operators of soybean production, processing, and marketing enterprises

6) coordinate its activities with other major soybean organizations, such as the American Soybean Association, with private sector soybean processing and marketing groups, with other public institutions and agencies, with other soybean research and educational activities in the midwest and south, and with the USDA and other related national programs.

SUITABILITY OF ILLINOIS FOR A NATIONAL SOYBEAN RESEARCH LABORATORY

Illinois leads all other states and almost all other nations in soybean production, processing, marketing, and research and development. It plants more acres, produces more soybeans per acre, and produces more total soybeans than any other state. In addition, it exports more soybeans than any other state.

The public, through state and federal agencies and institutions, invests almost twice as much in soybean research in Illinois as in any other state. Illinois, working through state and national commodity groups, ranks among the top three states in terms of producer investment in soybean promotion and research.

SUITABILITY OF THE UNIVERSITY OF ILLINOIS FOR A NATIONAL SOYBEAN RESEARCH LABORATORY

The University of Illinois at Urbana-Champaign (UIUC) has a unique combination of characteristics that make it an especially appropriate location for a National Soybean Research Laboratory.

Excellent location, stable support, and prestige

The UIUC is centrally located in the midwest and is in the heart of the major soybean production area of the nation. With its diverse economy and major urban population centers, Illinois provides stable support to its land-grant university, which is recognized nationally and internationally as a premier research and educational institution.

Many strong soybean research programs

More than 100 scientists are involved in soybean research in the departments of Agronomy, Plant Pathology, Food Science, Agricultural Engineering, Agricultural Entomology, Agricultural Economics, and Animal Sciences and in the School of Human Resources and Family Studies. Scientists in the School of Life Sciences and in the Colleges of Veterinary Medicine, Engineering, and Commerce and Business Administration are also conducting research that is directly related to the soybean industry.

Many excellent, related research programs

The University of Illinois has strong basic research and graduate programs in all the major areas of agricultural science. It also has strong applied research programs that make the basic research programs relevant to midwest agriculture. Over 125 University scientists are engaged directly in biotechnology research. They have established a strong leadership position in plant and animal biotechnology research and education.

The University has recognized faculty expertise in molecular genetics, photosynthetic processes, crop evolution, nitrogen fixation and metabolism, biological control of pests, cell and tissue culture, and environmental and genetic toxicology, among other areas related to soybean research.

There are other relevant graduate and professional training programs of demonstrated excellence in botany, entomology, ecology, plant and animal genetics, microbiology, plant, animal and human physiology, biophysics, cell biology, parasitology, bioengineering, chemical engineering, veterinary medicine, human medicine, human nutrition, computer sciences, social sciences, humanities, and law.

Germplasm and genetic stocks collections

The United States Department of Agriculture-Agricultural Research Service maintains over 80 percent of the nation's soybean germplasm collection at the University of Illinois. In addition, the University maintains unique genetic stocks of the wild annual and perennial relatives of soybeans. These collections are maintained, enlarged, and enhanced by further exploration and by new evaluation techniques.

Productive cooperative relationships

Located at the University of Illinois is one of the most productive contingents of USDA-ARS plant scientists, with outstanding fundamental research programs in photosynthesis; nitrogen fixation and utilization; soybean germplasm and variety improvement; weed, disease and nematode control; plant growth and metabolism modeling; field physiology; and soil-water-air-plant relations. Much of the USDA-ARS program at the University of Illinois is devoted to soybean research.

Through the regional research system of the State Agricultural Experiment Station System, the University of Illinois soybean research program is closely linked and coordinated with other soybean research programs in the North Central and Southern regions. Through the International Soybean Program, University of Illinois scientists are linked to soybean utilization research efforts in over 100 nations.

Field and animal research facilities

The University has a major concentration (2200 acres) of field research plots and animal research facilities located adjacent to the campus and to the proposed site for the National Soybean Research Laboratory; five large outlying research centers; and several smaller research fields located throughout the state. Pathogen-free livestock are available for soybean feeding studies. The University houses the designated State Agricultural Experiment Station of Illinois and thus administers federal funds for agricultural research in Illinois.

Relationships with the private sector

The University of Illinois has been particularly successful in attracting support from the private sector for soybean research. Examples include grants of over $1.5 million from the Agrigenetics Corporation; $2 million from Standard Oil of Ohio to establish the SOHIO-UIUC Center of Excellence in Crop Molecular Genetics and Genetic Engineering (awarded in competition with over 950 institutions and private firms); and $1.6 million from the McKnight Foundation for photosynthesis research.

In addition, the institution participates in the Biotechnology Research and Development Consortium (BRDC), comprised of the University of Illinois' Biotechnology Center, the USDA's Northern Regional Research Center in Peoria, IL, and six private companies (American Cyanamid Company, Wayne, N.J.; Amoco Technology Corporation, Naperville, IL; Dow Chemical Company, Midland, MI; Ecogen Inc., Langhorne, PA; Hewlett-Packard Company, Palo Alto, CA; and International Minerals and Chemical Corporation, Northbrook, IL).

The University is also a member of the Midwest Plant Biotechnology Consortium (MPBC), comprising 15 universities, one federal laboratory, a research institute, and 37 agribusiness corporations headquartered in the Midwest. The institution works closely with the soybean seed industry, through foundation seed and seed-certifying agencies of Illinois and other states. Private sector relationships provide for rapid implementation of new university-produced technology in the soybean industry.

Special programs and facilities

Faculty and staff of the National Soybean Research Laboratory will be able to draw on several other unique strengths of the University of Illinois. These include the: Knowledge Engineering Laboratory of the Department of Computer Science;

National Center for Supercomputing Applications; Institute of Government and Public Affairs; gateways to national and international computer networks provided by the Computer Services Office; Digital Computer Laboratory; Coordinated Sciences Laboratory of the College of Engineering; food engineering pilot facilities of the Agricultural Engineering Sciences Building; Sponsored Research Incubator Building and associated business incubator program.

A very important program related to NSRL objectives is the Identity-Preserved Grain program of the Illinois Crop Improvement Association, housed in the Sponsored Research Incubator Building. Several activities in the College of Commerce and Business Administration are related to NSRL goals. These include the Executive Development Center and the Office of Business Innovation and Entrepreneurship, among others.

Special facilities that house programs related to the NSRL objectives include: the new Plant Sciences Laboratory; the newly renovated Agricultural Bioprocess Laboratory; the Plant and Animal Biotechnology Laboratory, now under construction; and the proposed Agricultural Library, a new building for which private and state funds are being solicited. This structure will house the agriculture library and, eventually, an international trade information center.

SUMMARY

We request an allocation of $3.5 million in federal funds to complete the National Soybean Research Laboratory. This facility, staffed, operated, and maintained by the University of Illinois and its federal, state, and private cooperators and supporters, will be a great asset to the soybean industry, its customers, and the nation as a whole.

The University of Illinois at Urbana-Champaign, with its central location, outstanding support facilities, and strong institutional commitment to soybean research, is a superb setting for the National Soybean Research Laboratory. The Laboratory will be a strong national center focused on multi-disciplinary, multi-faceted soybean research and education and will enable the U. S. soybean industry to enhance its competitive position in the global agricultural economy.

UNIVERSITY OF MISSOURI-COLUMBIA

STATEMENT OF DR. JUDSON D. SHERIDAN, VICE PROVOST FOR RESEARCH AND DEAN OF THE GRADUATE SCHOOL

Dear Senator Burdick:

The National Initiative for Research on Agriculture, Food, and Environment, proposed by the National Academy of Sciences and the USDA, is arguably the most significant new effort to stimulate research in agriculture and related areas in this half century, perhaps since the Morrill and Hatch Acts. It is based on a thorough analysis of the nation's current ability to address the critical problems it faces in such areas as natural resources and environment, nutrition food quality and health, new products, processes and value-added, and markets, trade and policy. The initiative has captured the attention and gained the support of individuals and groups representing a broad cross-section of society, from scientists to environmentalists, from producers to consumers, from industries to universities. It has already become part of the President's agenda in recognition of its timeliness and importance and now it needs the thoughtful and supportive consideration by Congress.

Despite the importance of agriculture, food and environmental issues to the people of the United States, USDA funding for the critical, basic research in these areas has experienced the lowest rate of growth of any of the federal agencies supporting R&D. In fact, the National Academy of Sciences report indicated that, in real dollars, there has been effectively no increase since 1955. This relative stagnation of funding has prevented USDA-supported researchers from capitalizing optimally on the newest technological advances in biological, physical, engineering, and informational sciences. As a nation, we are finding it more difficult to remain competitive either in terms of our advancement of scientific knowledge in these important areas or in terms of our international position.

The Administration has recommended $100 million for the National Initiative in FY 1991, a substantial move forward, but, I would argue, not far enough. While I recognize that we will have to approach in phases the target figure of $500 million recommended in the NAS report, the Administration's figure fails to include funds for the areas of new products and processes and of market, trade, and policy and provides only small amounts for natural resources and for nutrition and food quality. Yet these programs are aimed at particularly urgent needs in agricultural competitiveness, environmental concerns and diet-health and food safety issues. The Coalition for Advancement of Research on Agriculture, Food, and Environment (CARAFE) recommends adding funds for these essential programs, bringing the total for FY91 up to $150 million.

Besides providing funds, the proposed grant programs will help improve the balance of funding mechanisms, increasing the proportion of merit-based, competitive awards from 3 to 30% when the initiative is fully funded. This shift will help ensure that projects of the highest quality and relevance will be supported.

As a land-grant university, with a 151-year tradition of responding to the needs of the state, the region and the nation, the University of Missouri-Columbia is committed to the goals and far-sighted programs of the National Initiative. I urge you to support the investment needed to make these programs a reality.

Would you please enter this letter in the record?

Yours sincerely,

Judson D. Sheridan, D.Phil.
Vice Provost for Research and
Dean of the Graduate School

UNIVERSITY OF RHODE ISLAND

STATEMENT OF ROBERT MILLER

INTERNATIONAL TRADE DEVELOPMENT CENTER FOR AQUATIC PRODUCTS

The magnitude of the U.S. trade deficit in aquatic products alone is a forceful argument for an International Trade Development Center for Aquatic Products at the University of Rhode Island. Aquatic products include finfish, shellfish, seaweeds and all their product forms and derivatives.

The proposed center will analyze international market opportunities, develop value added products, identify barriers and inefficiencies in existing marketing channels and disseminate information. These activities will result in:

1) Benefits to the fledgling U.S. aquaculture industry not only in the Northeast, but across the nation. Information on consumer preferences in international market structures will benefit the range of aquaculturists from salmon and hybrid striped bass producers in the Northeast to catfish producers in the southern states and trout farmers in Idaho and the Northeast.
2) Benefits to the farmer/aquaculturist and feed producers who service the aquaculture industries and will generate benefits for the rural town in which they are all located.
3) It will establish linkages between scientists in the Department of Resource Economics and Food Science and Nutrition at U.R.I. and scientists at other Northeast universities. It will form a network of scientists across the U.S. at such institutions as Auburn, L.S.U., Mississippi State, University of California, Oregon State, Washington State and the Universities of Hawaii and Alaska and around the world.
4) It will assist the U.S. capture fishing industry, especially in the Atlantic but also in the Pacific, in market identification and penetration.
5) It will assist the private sector in targeting markets for currently exploited and underexploited species. The industry has much to learn, particularly about Asian markets and market opportunities in eastern European markets.

The Center will provide market intelligence to the typical relatively small sized U.S. firm who is in competition with gigantic integrated trading firms operated particularly by the Japanese, Taiwanese, Koreans, Canadians, and Norwegians.

It will help U.S. firms to compete with foreign firms who generally receive significant assistance from their governments in marketing strategies, operation and technology.

UNIVERSITY OF SOUTHERN MISSISSIPPI

STATEMENT OF DR. SHELBY F. THAMES, DISTINGUISHED UNIVERSITY RESEARCH PROFESSOR

Senator Burdick and members of the committee, I am Shelby F. Thames, Professor of Polymer Science at the University of Southern Mississippi in Hattiesburg, MS. Mr. Chairman I would like to thank you and other members of the subcommittee for your support and assistance over the past several years. I would like to take this opportunity to report to you on the progress which has been and is being made with regard to the construction of a USDA sponsored Polymer Science Research Facility. This facility is being constructed on the campus of the University of Southern Mississippi and when completed will represent the state-of-the art in polymer science research capability. This research facility will make it possible to conduct a broad range of agricultural related research projects. The Polymer Science faculty is committed to excellence in research and desires to play a significant role in the future research efforts on agricultural materials; specifically as they relate to the use of agricultural materials in the polymer industry. We are uniquely qualified for this challenge in that the University established the Department of Polymer Science as an autonomous academic unit in 1970. The Department was one of, if not the first to offer Bachelors, Masters and Doctor of Philosophy degrees in Polymer Science. We have grown to twelve full time faculty, one hundred and fifty undergraduate majors and approximately 50 students seeking advanced degrees. Our research component is very strong as it utilizes degree seekers at the undergraduate and graduate levels supplemented by several postdoctoral fellows and, of course, our own nationally recognized research faculty.

At the outset of this project the University established a committee whose purpose was to study, evaluate and to make recommendations regarding the requirements of a modern polymer science research facility. The committee was broad based and included members from the scientific, engineering and architectural disciplines. The members of this committee and their area of responsibility are listed below:

Mr. David Anderson, USM Construction Engineer
Mr. Larry Daughtry, Electrical Engineer
Dr. Roger Hester, Professor of Polymer Science
Dr. David Huffman, Dean of the College of Science
and Technology
Mr. Turner Jones, Mechanical Engineer
Dr. Kenneth Mauritz, Associate Professor of Polymer Science
Dr. Charles McCormick, Professor of Polymer Science
Dr. Dennis Canfield, Assistant Professor of Polymer Science
Dr. Shelby F. Thames, Distinguished University
Research Professor

Members of the committee were assisted by Canizaro and Trigiani/ Architects and Eley Associates/Architects, in consultation with Earl Wall Associates of San Diego, CA. The architects and design engineers were responsible for the design of a functional research facility meeting all necessary codes and regulations. They were approved by the Board of Trustees of Institutions of Higher Learning of the State of Mississippi after the committee heard presentations and made extensive evaluations of numerous architectural firms. The architects have worked closely with all members of the committee and completed the building plans and specifications. The plans and specifications received all necessary approvals including that of our University President, Dr. Aubrey K. Lucas, The Board of Trustees of The Institutions of Higher Learning of Mississippi and the United States Department of Agriculture. Subsequent to the approval of the plans and specifications the building was let for bids according to the laws and regulations of the State of Mississippi. The bidding process resulted in the general contractor, Finlo, Inc. being selected. All approvals necessary for construction to begin were obtained. With funding made possible through USDA, construction began on August 1, 1988. The architects are currently overseeing the construction of the facility and report that construction is on schedule and no projected delays expected. With construction funds in hand, a need arose for additional equipment funds to properly equip the facility and thus complete the project. As always, you were most helpful in seeing that these needs were met and I am delighted to report that as a result of the most recent Congressional appropriation the facility will be completed in all respects. I have been notified by Mr. Royce Pierce, the On-Site Architect, that the contractor will be substantially complete with his work when his contract time of September, 1990 expires. However, there will be additional equipment and furnishings installation required so as to move the anticipated occupancy date to December, 1990.

With the completion of the Polymer Science Research Facility it is wise to look to the future and insure its appropriate utility. I was pleased to have been a speaker at the recent first national conference on "Commercializing Industrial Uses for Agricultural Commodities," held March 14-16, 1990 in Washington, D.C. The focus of this conference was to emphasize the importance and the existing opportunities for commercializing industrial uses for agricultural commodities. It is clear that agricultural commodities can successfully compete with petroleum based derivatives. Moreover, agricultural commodities have immense potential in the polymer and related industry. For instance, on-going cooperative research between scientists from Texas, New Mexico, Arizona, California and Mississippi is moving toward the establishment of a domestic, natural rubber industry. The success of this endeavor is particularly important given that this nation's entire supply of natural rubber, a strategic material, is currently being imported.

This work was given impetus in 1977 by an ad hoc advisory panel established by the National Academy of Sciences. The panel concluded that commercialization of guayule would require:

- The development of a standard rubber product of known properties, and
- The commercial utilization of processing co-products.

To achieve these goals scientists must understand the nature of the rubber, *cis*-polyisoprene, and non-rubber materials produced by the Guayule shrub and apply this understanding to the development of value added products for the industrial marketplace. While the scientists from Texas, New Mexico, Arizona and California are involved with research and development activities in the areas of plant breeding, separation science, land and water management and developing planting and harvesting techniques for Guayule, the University of Southern Mississippi has the responsibility for finding new and economically attractive uses for the co-products resulting when natural rubber is extracted from the Guayule shrub. Guayule is the only temperate zone plant which produces a linear, high molecular weight rubber; the product required for fabrication of high quality elastomers such as surgical gloves and auto and aircraft tires. It thrives in the semi-arid regions of the United States on desert lands which traditionally produce no agricultural crops. Therefore, to utilize such lands for the establishment of a domestic natural rubber industry would be a major accomplishment.

The USM scientists have work diligently to identify the coproducts generated in the processing of Guayule shrub and to utilize these coproducts for development of commercial, value-added products. Accordingly, we have shown that **the low molecular** weight rubber isolated during processing can be employed for the production of **chlorinated rubber**, a product used in durable and corrosion resistant exterior coatings. These coatings are heavily utilized as industrial maintenance coatings, highway marking paints, and corrosion inhibiting coatings. They are products of high quality, as the chlorinated guayule rubber imparts excellent resistance to water, exterior conditions and chemical attack. The chlorinated rubber is sold for more than three times the cost of high molecular weight Guayule rubber and therefore is one, very attractive coproduct to be developed as part of the commercialization of the Guayule rubber industry in America. These results serve as an example of the type research and development activities of polymer scientist. You and your colleagues of the 98th Congress are responsible for these developments; you made it possible by enacting public law 98-224, the Critical Agricultural Materials Act, in 1984. The law stated, in part:

> "Congress recognized that the development of a domestic industry or industries for the production and manufacture from native agricultural crops of products other than rubber which are of strategic and industrial importance but for which the Nation is now dependent upon foreign sources, would benefit the economy, the defense, and the general well-being of the Nation, and that additional research efforts in this area should be undertaken or continued and expanded."

The funding of the construction of The Polymer Science Research Facility is most appropriate as Mississippi is a state with a strong agricultural heritage. Moreover, polymer science at the University of Southern Mississippi had its origin in the use of agricultural materials. In the early 1960's tung tree cultivation was prevalent along the Southern border of the state and leaders of the industry perceived a need to develop new uses for tung oil in an effort to expand its economic importance. It was well known at that time that tung oil was a high quality, naturally occurring vegetable oil with unique drying properties. In fact, it was part of the strategic stockpile during World War II, as Guayule is today.

The University of Southern Mississippi initiated a major research effort to develop commercial uses of tung oil. The results of these studies, the quality of the student educated, as well as the national need for trained polymer scientists was sufficient justification to obtain approval for the development of a separate and autonomous academic unit, the Department of Polymer Science, in 1970. With administrative approval the Department of Polymer Science was formed and the initial seed of Polymer Science had taken root in south Mississippi. Growth has continued over the years and currently agriculturally derived polymer components continues to be a high priority.

Ours is a strong and lasting commitment to the research utilization of agricultural crops and to affirm your wisdom in providing support for this much needed facility. Once again Chairman Whitten, I thank you and the Members of your subcommittee for your past assistance and for enabling the completion of this project.

STATEMENT OF HON. MALCOLM WALLOP, U.S. SENATOR FROM WYOMING

Mr. Wallop. Mr. Chairman, today, I am submitting numerous documents and letters for the subcommittee record endorsing the concepts and theory behind the funding and development of the proposed Environmental Simulation Facility. The prototype which has been developed has been introduced to scientific communities in both the public and private sector and the support has been extensive and extraordinary.

This research facility at the University of Wyoming -- aptly named the Environmental Simulation Facility (ESF) -- is nothing short of phenomenal. I am no scientist, but, I am able to see clearly its practical applications and the implications this facility will have for scientific research -- and they are staggering. The money and time that could be saved using the ESF concept for testing environmental cleanup technology is impressive. More importantly, it will virtually eliminate chances for error in applied environmental solutions to serious problems.

The ESF is a one a kind facility which could very well hold the key to effectively meeting many of the environmental research needs of the future. Scientists will be able to duplicate virtually any ecosystem desired and stress it in this controlled environment using virtually any environmental process desired. The ESF prototype has been tested and proven to accurately predict what happens to an ecosystem exposed to existing or proposed challenges to its environmental integrity. If snow, rain, flowing water, heat, cold, humidity, growing plants are needed to stress this simulated environment -- it can be done. There is no facility like this prototype anywhere around the world -- The Wyoming ESF is state of the art, one of a kind.

Development of this technology will allow the U.S. to be on the leading edge of environmental research for many years to come.

The ESF development came about because of dissatisfaction with available research technology. Science has a real void in its ability to scale up from the laboratory microcosm to the field site macrocosm. This lack of reliable scale up from tabletop research to field site demonstration has cost the science community innumerable hours and enormous amounts of money -- often times with years of research resulting in little progress toward a solution.

The capabilities and technologies built into this facility have opened the eyes and elicited the support of scientists nationwide. Scientists working on our nation's environmental research at EPA, USDA, DOE and others have been briefed on the ESF. Subsequently, EPA and USDA have submitted letters of support as well as some supplemental documentation on needed research that could be performed using the ESF. Both EPA and USDA are sending scientists out to Wyoming to tour and provide a peer review of the prototype facility -- there is a genuine excitement in the scientific community about the ESF's potential.

Mr. Chairman, I could go on and on, however, the conclusion is clear -- there are currently numerous obstacles to performing the kind of environmental research that is so badly needed: time, money, and technology. The University of Wyoming's Environmental Simulation Facility allows one to address all of these problems. It provides new and advanced technology for cleanup of polluted air, land, and water. However, most importantly, it utilizes this new technology to greatly reduce the amount of time and money and potential for error inherent to current environmental research programs.

Support for the success of this project is wide spread. It is my hope that the ESF will receive funding in FY91 so that the technology, time and cost benefits espoused by this facility can go to work on our environmental cleanup needs.

WASHINGTON STATE UNIVERSITY

LETTER FROM SAMUEL H. SMITH, PRESIDENT

The Honorable Quentin N. Burdick, Chairman
Senate Appropriations Committee
Subcommittee on Agriculture, Rural
  Development, and Related Agencies
140 Dirksen Senate Office Building
Washington, D. C. 20510-6025

Dear Senator Burdick:

I am writing concerning the proposed Congressional appropriations for agricultural research to the Cooperative State Research Service, USDA, and the State Agricultural Experiment Stations (SAES) through the Hatch Act and related legislation; and the relationship of SAES priorities to the National Initiative for Research on Agriculture, Food, and Environment.

In the twenty years that I have been involved in agricultural research as a scientist, as Dean and Director of the College of Agriculture of The Pennsylvania State University, and now as President of Washington State University, dramatic changes have occurred in the agricultural science and education system. First, our national priority-setting process to address continuing and emerging issues has been established. Second, the array of issues that must be researched has broadened from plant and animal productivity to include practices that conserve and protect natural resources and emphasize nutritional quality and safety in the entire food system. Third, to develop this scientific knowledge, a solid base program of research in State Agricultural Experiment Stations has been established. Finally the National Research Initiative, proposed by the Board on Agriculture of the National Research Council, provides a new, competitive grants-mechanism to initiate research on priority program areas. The National Research Initiative includes six program areas: 1) environment and natural resources, 2) food, nutrition, and health, 3) engineering, processes, and products for value-added improvement, 4) markets, trade, and rural revitalization, 5) animal systems, and 6) plant systems.

I support strongly the proposal of the National Association of State Universities and Land Grant Colleges for $150 million for the National Initiative for Research on Agriculture, Food, and Environment in fiscal year 1991. This level of funding is $50 million more than the Executive Request. It is essential to provide funding for all six areas for a comprehensive research program. I also support a six percent increase in the base programs of Hatch, McIntire-Stennis, Evans-Allen, and animal health programs to prevent further erosion of the current strength of the SAES.

Attached is a more detailed explanation of these program needs.

Thank you for your continued interest and support of agriculture and rural development.

Sincerely yours,

Samuel H. Smith

Samuel H. Smith
President

STATEMENT OF JAMES J. ZUICHES, DIRECTOR, WASHINGTON STATE UNIVERSITY AGRICULTURAL RESEARCH CENTER

This testimony addresses the congressional appropriations for agricultural research to the experiment stations through the Hatch Act and related legislation and the relationship of SAES priorities to the National Research Initiative on agriculture, food, and environment.

Through the sections and subtitles contained in Title XIV of the Food Security Act of 1985, the Congress has provided guidance and funding support for agricultural research, extension and resident instruction programs at land grant universities; and these systems have contributed significantly to the development and success of this nation's agricultural science and education system and to the health and well being of rural and urban Americans.

The support and appropriations provided to the State Agricultural Experiment Stations have helped create a system of which we all can be proud; but we still face numerous challenges associated with our agricultural production, processing and distribution systems. At the same time we have many new opportunities to improve the production efficiency and the global competitiveness of our agricultural system while improving the safety and nutritional value of our food supply, the safety and quality of our air and water, and conserving our natural resources for future generations.

The State Agricultural Experiment Stations, along with affiliated groups in forestry, home economics, veterinary medicine, and the 1890 Land Grant Universities, have an active, working strategic planning process that fosters a continual assessment of the priorities for research so they address continuing and emerging issues. The ESCOP plan is updated annually and a major revision is undertaken every four years. The quadrennial update involves a concerted two year effort to solicit input from a broad cross section of groups involved with agricultural research.

Input is received from industry, from professional and scientific societies, from every state through the State Agricultural Experiment Stations system, from affiliated groups such as forestry, home economics, and veterinary medicine, and from all federal agricultural research agencies. This past year, more than 600 separate recommendations were submitted from outside the State Agricultural Experiment Station system for new and continuing research. The input was truly broad based.

The process also included a major policy symposium held last summer to debate and sharpen the recommendations, and concluded with a major workshop in August, 1989 to draft the quadrennial plan. The ESCOP quadrennial plan and research agenda are organized under the same broad headings that were used by the National Academy of Sciences in its report entitled, "Investing in Research: a Proposal to strengthen the Agricultural, Food and Environmental System" (October 1989). This format permits an easy comparison of the agendas for research and the resources needed to address these agendas.

The agenda for research of the State Agricultural Experiment Stations is titled, "Research Agenda for the 1990's--a Strategic Plan for the State Agricultural Experiment Stations" and this agenda has been widely distributed.' It charts the future directions for experiment station research.

In the recent planning process, ESCOP has identified six broad areas of research that are important to our nation's future and need to be enhanced. They address:

1. Environment and Natural Resources: Research to protect water quality and the conservation and efficient use of water; to improve the compatibility of agriculture, natural resources, and the environment; to develop an understanding of the impacts of global environmental change; and to improve the sustainability of natural resource productivity. This last topic encompasses core areas of forestry, rangelands and wildlife resources for recreational and commercial use.

2. Food, Nutrition and Health: Research to ensure the safety and stability of consumer foods; to understand the molecular and cellular basis of human nutrition; and to develop optimal health parameters through improved understanding of nutrition and health.

3. Engineering Processes and Products for Value-Added Improvement: Research to develop new processing technologies for added value; to expand biomaterials use and derive alternative uses of plant materials; to determine the physio-chemical properties of food and bio-materials; to develop novel food and fiber bioconversions; to quantify sensory and quality attributes of consumer products; to develop analytical methods for monitoring nutrient, toxicant, and bio-active agents in foods; and to develop new and novel packaging systems.

4. Competitiveness in Markets and Trade and Rural Revitalization: Research on these economic and social issues to enhance rural community and economic performance with a focus on developing the potential of small rural business enterprises; to improve marketing efficiency and competitiveness of agricultural products, both domestically and internationally; to develop a better understanding of the stability and well being of families, youth, and the elderly; to assess the impacts of new technologies on the environment, people and communities; to develop a better understanding of dietary patterns, health and the behavior of the food consumer; and to develop a research and education policy for agriculture and rural society.

5. Animal Systems: Research to identify mechanisms that control the composition and nutritional quality of animal products; to achieve genetic enhancement of animal efficiency; to improve animal health and well being; to understand the biology of animal production performance; and to develop range and pasture-based animal production systems.

6. Plant systems: Research to develop systems for more safe and effective management of pests; to understand the process of genetic enhancement of plants; to develop improved plant production systems; and to improve the understanding of the use of plants to enhance the quality of the environment.

These new initiatives build on and depend on the quality of the base programs of the State Agricultural Experiment Stations. In each program area, the current strengths were specified, reallocations of the base programs identified, and new initiatives proposed. For example, in animal systems research, a substantial redirection toward biotechnology has occurred in departments of animal, poultry, and dairy science and in colleges of veterinary medicine to exploit new technologies and develop diagnostic tools, new immunogens, and a better understanding of the genetics of animal health. Active base effort in production-oriented research, especially animal health research, however, needs to be maintained and new areas of food safety issues such as residues and microbial contamination, need to be addressed. Unfortunately, the overall investment in animal systems research has been relatively stagnant, when expressed in constant dollars. A similar statement of redirection and new funding requirements to support the base program can be made for each of the other five research program areas.

To prevent further erosion of the base programs, the State Agricultural Experiment Stations are recommending a six percent increase in funding for FY 1991 in base programs, specifically Hatch Act programs, McIntire Stennis, Evans-Allen programs, and Animal Health (Section 1433) program support. These base programs provide the core federal support in each state, and leverage nearly five times additional state funds. The State Agricultural Experiment Stations oppose the proposed Executive budget's $4.3 million reduction of McIntire-Stennis support for forestry research, and oppose the proposed $5.4 million reduction in animal health (Section 1433). Both program areas provide essential, ongoing base support to solve forestry or animal health problems and to maintain the competitiveness of these industries.

As I indicated, the ESCOP planning process incorporated a broad based constituency and identified priority areas similar to the proposal of the Board on Agriculture on the National Research Council. The National Research Initiative, to strengthen the agricultural, food and environmental systems, is a means to expand the scientific effort and expand the knowledge base of the six program areas. The expansion of a competitive grants program would complement, not substitute, for enhanced funding of the base programs. Such an expansion, however, must not come at the expense of currently funded programs, particularly at the expense of base funds, for the deterioration in base funds would further reduce the competitiveness of SAES scientists in responding to these identified needs.

The State Agricultural Experiment Station system fully endorses the National Initiative for Research on agriculture, food, and environment. The Board on Agriculture called for overall $500 million effort. We recommend that $150 million be initiated in FY 1991. Although the President's FY 1991 budget proposal called for starting the National Initiative at $100 million, of which $42.5 million is current competitive grant funds and $57.5 million is additional funding, we would point out that the Executive budget does not include two of six program areas and would not adequately support two other areas.

All six of the program areas of the National Initiative should be started in FY 1991, including the areas called Markets, Trade and Rural Revitalization (this title reflects the substance in Markets, Trade and Policy), and Engineering Processes and Value-Added Products (this title reflects better the substance of New Products, Processes and Value Added terminology used in USDA's program plan for the National Initiative). In addition, increased initial funding is recommended for the program area Natural Resources and the Environment to provide support for forestry and rangelands topical research; and for Nutrition, Food Quality and Health to address the issues of food safety, contamination and microbial hazards.

The State Agricultural Experiment Stations also recognize and are responsible for research that must be directed and closely linked to state needs. We recommend the continuation and strengthening of Special Grants (Section 2-C) programs, for Integrated Pest Management, acid precipitation, minor use animal drugs, the pesticide clearance and pesticide impact assessments program, and the Centers Program in Rural Development, Aquaculture, and International Trade. The special grants program in Water Quality and Management and Global Change also reflect selected national priority areas. One other program bears mentioning, the Alternative Agriculture or Low-Input Sustainable Agriculture (PL.99.198) effort has brought researchers, extension, and growers together in efforts to achieve a competitive and profitable system of production while reducing expensive inputs; this program deserves continued support.

In addition to the research agenda, ESCOP strongly supports the resident instruction and extension requests to strengthen education programs that affect our ability to conduct research and transfer technology in the future. Without this ability, new knowledge will not be generated and transferred to the users who would gain the economic benefits. Specific needs are for the training of future scientists. Ultimately, the agricultural research and education system and the nation are dependent on well-trained people. A well-educated cadre of highly trained scientists is the foundation necessary to solve this nation's environmental, production, and economic problems. The National Research Initiative will enable the nation's colleges and universities to make substantial progress toward alleviating the projected shortage of trained scientists. The 1890 Capacity Building Grants will strengthen these universities and colleges in their efforts to expand minority expertise in food and agriculture.

I appreciate the opportunity to present these issues and recommendations for your consideration on behalf of the State Agricultural Experiment Station system.

STATEMENT OF THE WESTERN ASSOCIATION OF AGRICULTURAL EXPERIMENT STATION DIRECTORS

RESOLUTION OF SUPPORT FROM THE WESTERN ASSOCIATION OF AGRICULTURAL EXPERIMENT STATION DIRECTORS FOR PROCEEDING WITH CONSTRUCTION OF THE U. S. SALINITY LABORATORY

RESOLUTION: *The Western Association of Agricultural Experiment Station Directors (WAAES),. which was instrumental in founding the U. S. Salinity Laboratory more than a half century ago, reaffirms the critical importance of that research institution as the nation's primary bulwark against salinization of croplands and in the preservation of water quality in those arid and semiarid Western states that are dependent upon irrigated agriculture. In reaffirming the primary research role of the U. S. Salinity Laboratory in the nation's battle against salinity, WAAES urges that Congress in the 1991-92 Fiscal Year appropriate the remaining funding necessary for construction of the laboratory's new relocated quarters on the campus of the University of California in Riverside, California.*

Approved at the Spring WAAES meeting, March 27, 1990.

RATIONALE: Since its founding in 1937, the U. S. Salinity Laboratory has played the primary national leadership role in conducting research on salinity problems, originating new concepts and strategies for water resource management, and in preserving the water quality of all of the western states that are dependent on irrigated agriculture, especially those situated along the Colorado River Basin. Salinization of croplands today constitutes the greatest threat to farming in the semi-arid regions of the American West, and it is estimated that more than $5 billion in crop yield losses occur annually because of salinity problems.

The establishment of the U. S. Salinity Laboratory was an outgrowth of a decision made by the directors of the Agricultural Experiment Stations of 11 Western States in 1935 during a meeting with representatives of the U. S. Department of Agriculture. In that year, Congress adopted the Bankhead-Jones Act making funds available for agricultural research on a regional basis. The decision at that meeting that priority should be given to research on problems connected with the control of salinity in soil and water led to the establishment of the U. S. Regional Salinity Laboratory two years later on grounds adjacent to the University of California's Rubidoux Laboratory at the base of Mount Rubidoux in Riverside, California. As irrigation agriculture became more widespread, the number of cooperating Agricultural Experiment Stations was increased in 1951 to include seven additional midwestern states. The name of the regional laboratory was then modified to the U. S. Salinity Laboratory, which today is administered by the Agricultural Research Service of the U. S. Department of Agriculture.

In the years since its founding, the U. S. Salinity Laboratory has become the driving force in sustaining productive agriculture in those irrigation-dependent western states which collectively produce most of America's farm crops. The U. S.

Salinity Laboratory has among its many accomplishments played the lead role in developing irrigation management methods to control salinity along the Colorado River, carried out research under the U. S Bureau of Reclamation that has reduced return flow of salt-laden water to agriculture, and assisted the California Water Resources Board in establishing water quality standards for the California Delta. Its research areas have encompassed studies of the relationship of soil salinity to physical and chemical properties; irrigation, drainage, and soil management practices, and salt tolerance and water requirements of crops. Currently, it is developing new use and management techniques for brackish water in the Imperial Valley. U.S. Salinity Laboratory scientists serve a central role as consultants and advisors in assisting numerous public agencies in developing salinity control measures.

For several decades, the U. S. Salinity Laboratory has been hampered in performing its functions by the fact that the half-century old Rubidoux Laboratory is antiquated, outmoded, and grossly inadequate by modern research standards. In 1986, Congress authorized construction of a new U. S. Salinity Laboratory facility to replace the deteriorating quarters of the present laboratory. Subsequently, Congress appropriated $1 million in funding for designing the new facility and an initial complement toward construction. The design phase of the laboratory is 95% completed and will be finalized in April. The new quarters will be relocated on a 7.5 acre site at the University of California, Riverside, which has shown its support for the project by its willingness to lease the new site for 50 years at $1 per year to the federal government.

The Western Association of Agricultural Experiment Station Directors in drafting the above resolution reaffirms the critical importance of the U. S. Salinity Laboratory and its research in sustaining productive agriculture in those Western states which collectively produce most of America's farm crops. Problems of soil and and water salinity represent one of the most urgent long-term threats to irrigated western agriculture in the twentieth century, and the U. S. Salinity Laboratory is a major national resource in combatting such problems through research and in informing and alerting public agencies on salinity related issues and assisting in the development of salinity control measures. We urge therefore that Congress appropriate the funding necessary to solicit bids from contractors so that construction of the facility can go forward in the 1991-92 budget year.

WAAES membership:

Alaska
Arizona
California
Colorado
Hawaii
Idaho
Montana
Nevada
New Mexico
Oregon
Utah
Washington
Guam

WILMINGTON, OH

STATEMENT OF CLIFFORD N. EVELAND, II, MAYOR

Mr. Chairman and Members of the Subcommittee, I thank you for this opportunity to appear before your Subcommittee to testify in support of the Water and Sewer Grant program.

I appear before you today to respectfully request that the Congress continue to fund the Water and Sewer Grant program at levels above $200 million dollars for Fiscal Year 1991. The need of our nation's rural communities for clean potable water and the government's assistance toward that end far exceed the level requested in the President's Budget. I support the continued funding of the Water and Sewer Grant program at or above the FY 1990 level of $209 million dollars, because only through such expanded availability of funds will my community and our surrounding counties be able to obtain Federal assistance for a critically needed water treatment facility.

Wilmington, Ohio is located in Clinton County in the southwestern corner of the State, in the middle of a triangle formed by Dayton, Cincinnati, and Columbus. With a population of 10,400 people, Wilmington is the largest city within a largely rural, agricultural region. The recent development of a national service industry -- the main hub for Airborne Express at the deactivated Clinton County Air Force Base -- as well as the growth of other industries and housing has strengthened our local economy; we are not experiencing a loss of population nor jobs. Many of those in our labor force work at the Industrial Air Park which houses Airborne Express. A majority of the workforce is drawn from the five counties which surround us. The increased demand for water has pushed our current facilities, which are quite old, to the limit. In fact, resources for future raw water supplies are quite limited throughout the entire southwest Ohio region.

In 1976, a study was provided by the Ohio Department of Natural Resources (ODNR) titled, "Southwest Ohio Water Plan." Due to the general lack of available groundwater, quality problems associated with small streams, and the lack of high sustained stream flows, the study recommended the use of Caesar Creek and East Fork Reservoirs ad the source for regional water supply. These two systems would serve 22 existing and one new public water systems, as well as a large number of rural water users.

The City commissioned the professional engineering consulting firm of Floyd Browne and Associates of Marion, Ohio to compile a comprehensive plan for the acquisition of water from Caesar Creek Reservoir, in accordance with the Southwest Ohio Water Plan. The recommendations of the study were as follows:

1. Design/construct a new 4 million gallon/day (mgd) water treatment plant near the intersection of S.R. 73 and the Clinton County line. The plant will be of modular design, to allow for expansion in 2 mgd increments.

2. Design/construct a new 20 mgd raw water intake structure along old State route near the village of Harveysburg.

3. Design/construct a new 36 inch raw water intake line between the new intake structure and raw water pump station.

4. Design/construct a new 24 inch raw water transmission line between the raw water pump station and proposed WTP.

5. Design/construct a new 12.5 mile, 24 inch treated water transmission line from the proposed WTP to the City of Wilmington's existing system; this line will have a 20 mgd capacity.

6. Connections to the public and private water companies should be made using master meters: agreements with these users should be initiated as soon as possible.

We are complying with these recommendations as best we can. A grant from the Farmers' Home Administration will help us to reach full compliance.

BACKGROUND

Clinton County, Ohio

Clinton County, population 34,000 (1980 census) is located in southwest Ohio near the center of a triangle formed by Cincinnati, Dayton and Columbus. To the south and east are the much more sparsely populated, primarily rural areas of southern Ohio including the Appalachian district of the State. More than one-third of the County's population is located in the City of Wilmington and the surrounding township, Union township.

The economy of Clinton is a careful dichotomy between agricultural and manufacturing and related industries. Approximately 30 percent of all residents in Clinton County according to the 1980 U.S. Census are employed in manufacturing and related industries. In 1987 Ohio Industrial Directory indicates that such industries in the county employ approximately 5300 persons. The Directory indicates that there are approximately 40 additional industries in the county generally with less than 100 employees.

Importance of Agriculture

Agriculture also plays an important role in the economy of Clinton County and the surrounding region, although a general decline in the farm based economy has forced many to seek part-time employment in local industry. A summary of selected agricultural statistics, as derived from the 1982 Census of Agriculture, indicates that the number of farms, the total amount of land in farms and the number of hired farm workers are all declining, both in Clinton County and for Ohio as a whole. Interestingly, it shows that most of the farm operators also work elsewhere at the same time as operating their farms. However, the data shows that agriculture is a major economic contributor to the people and business of the County and is continuing to grow in economic value.

A Clinton County farm on average, produces 20 percent more than the average farm in the State: $88,783 to $73,850 in 1982. Crops account for approximately 65 percent of the County's agricultural production value. Corn accounted for approximately 55 percent of the value to crops and soybeans another 35 percent. Hogs and pigs accounted for 73 percent of the value of livestock sales. Clinton County has frequently been one of the State's largest producers of both corn and hogs. The average size of a farm in Clinton County was 332 acres in 1982.

The following table displays the rural nature of our region. The figures for manufacturing jobs in Clinton County are a little misleading, because (1) the many people filling the jobs are farmers relying on their jobs for a secondary income, and (2) many of them are drawn from the surrounding counties (not Clinton County residents).

MANUFACTURING JOBS PER 100 POPULATION CLINTON COUNTY, SIX NEARBY COUNTIES AND STATE OF OHIO, 1986

	1985 Population Estimate	1986 Manufacturing Employees	MFG Employees Per 100 Population
Clinton County	34,700	5,302	15.3
Nearby Counties:			
Brown	34,000	1,208	3.6
Clermont	138,800	6,879	5.0
Fayette	27,500	3,408	12.4
Greene	129,900	6,261	4.8
Highland	34,500	2,590	7.5
Warren	103,700	7,195	6.9
State of Ohio	10,743,944	1,261,487	11.7

SOURCE: OHIO MANUFACTURER'S INDUSTRIAL DIRECTORY, 1987; AND CALCULATIONS

Increasing Need for Water

With increasing population and economic activity and with strong pressure to meet standards set by the Ohio Environmental Protection Agency for improved quality wastewater treatment, sanitary sewer improvements are needed in Clinton County.

Currently, there are six community water supply, treatment and distribution systems in Clinton County. Additionally, there are three rural regional systems. Water supply is a very critical problem in the area because of the small drainage areas of the streams and because of the serious lack of underground water. Although several regional systems with water sources from outside the County are helping to alleviate the problem in the southern parts of the County, a major new source of water is needed for the central and northwestern part of the County. The need is especially critical in the Wilmington area in order to allow the community to meet its needs and its economic growth potential. Such growth potential includes the dynamic potential of Airborne Express Inc. and the Wilmington Industrial Air Park. The most appropriate source for obtaining a large new water supply is Caesar Creek Reservoir, approximately 12 miles northwest of the City, primarily located in Warren County.

The City of Wilmington's water system currently obtains its raw water from Cowan Creek south of the City and is stored in two upground reservoirs with a combined storage capacity of 450 million gallons. From there it is pumped to the treatment plant, which has been upgraded to allow for a capacity of 2 million gallons per day. The water is then distributed to four elevated storage tanks around the City with a combined capacity of 1.5 million gallons per day. However, this meets only Wilmington's most immediate needs.

Caesar Creek Lake

The water source for this project is Caesar Creek Lake, which is located approximately 12 miles northwest of the City of Wilmington. The lake was built by the U.S. Army Corps of Engineers in 1978 and is currently leased to the Ohio Department of Natural Resources. The lake was originally authorized as a flood control project under the flood Control Act of June 22, 1938, then reauthorized under the Water Supply Act of 1958 to include water supply and water quality. The lake now operates for flood control in the valleys of Caesar Creek and the Little Miami River, and is a unit in the comprehensive plan for the Ohio River basin for storage of water as water supply, water quality control and recreation.

The man-made lake has a drainage area above the dam of 237 square miles and is one of the deepest lakes in Ohio having a maximum normal pool depth exceeding 110 feet. The drainage basin is characterized as agricultural and rural type growth.

Through an Economic Development Grant, we plan to tap the water supply of Caesar Creek Lake and provide treated potable water not only to the City of Wilmington, but to the surrounding area as well, through a regional water system. Since the City of Wilmington is organizing the effort to develop the Caesar Creek Water Supply, the water treatment project is referred to as the Wilmington Regional Water Treatment Facility.

The existing city water treatment plant will be phased out when the regional treatment plant is built, start-up is complete, and the new plant is fully operational.

The total cost of the new facility will be $8.5 million dollars. We understand the matching requirement for Federal Grants, and we plan to furnish the 25% local share.

The city meets all the criteria for this program. We will soon submit an application to the Farmers Home Administration for Water and Sewer Grant Funds, but we do not expect to have a competitive position for these scarce funds until Fiscal Year 1991 funds become available. For these reasons, we are requesting that the Subcommittee:

(1) Continue to fund in FY 1991 the Water and Sewer Grant Program at the maximum feasible levels, and

(2) Encourage the Framers Home Administration to review favorably the grant application for a water treatment facility for Wilmington and Southwestern Ohio.

Mr. Chairman, this concludes my statement. Thank you for this opportunity to appear before you and the Members of this Subcommittee to present my testimony.

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